shoes of the Latin mimes, and had a shaven face and close-cut hair. Jogleurs were admitted everywhere, and enjoyed the freedom of speech accorded to the professional jester. Their impunity, however, was not always maintained, for Henry I. is said to have put out the eyes of Luc de la Barre for lampooning him. A fairly defined class distinction soon arose. Those minstrels who were attached to royal or noble households had a status very different from that of the motley entertainers, who soon came under the restrictions imposed on vagabonds generally. A *joculator regis*, Berdic by name, is mentioned in Domesday Book. The king's minstrels formed part of the royal household, and were placed under a *rex*, a fairly common term of honour in the craft (cf. Adenès li rois). Edward III. had nineteen minstrels in his pay, including three who bore the title of waits. The large towns had in their pay bodies of waits, generally designated in the civic accounts as *histriones*. A wait under Edward III. had to "pipe the watch" four times nightly between Michaelmas and Shere Tuesday, and three times nightly during the remainder of the year. In spite of the repeated prohibitions of the Church, the matter was compromised in practice. Even religious houses had their minstrels, and so pious a prelate as Robert Grosseteste had his private harper, whose chamber adjoined the bishop's. St Thomas Aquinas (*Summa theologia*) said that there was no sin in the minstrel's art if it were kept within the bounds of decency. Thomas de Cabham, bishop of Salisbury (d. 1313), in a *Penitential* distinguished three kinds of minstrels (*histriones*)—buffoons or tumblers; the wandering *scurrae*, by whom he probably meant the goliardi (see GOLIARD); and the singers and players of instruments. In the third class he discriminated between the singers of lewd songs and those *joculatores* who took their songs from the deeds of princes and the lives of saints. The performances of these *joculatores* were permissible, and they themselves were not to be excluded from the consolations of the Church. The Parisian minstrels were formed into a gild in 1321, and in England a charter of Edward IV. (1469) formed the royal minstrels into a gild, which minstrels throughout the country were compelled to join if they wished to exercise their trade. A new charter was conferred in 1604, when its jurisdiction was limited to the city of London and 3 m. round it. This corporation still exists, under the style of the Corporation of the Master, Wardens and Commonalty of the Art or Science of the Musicians of London.

During the best time of minstrelsy—the 10th, 11th and 12th centuries—the minstrel, especially when he composed his own songs, was held in high honour. He was probably of noble or good bourgeois birth, and was treated by his hosts more or less as an equal. The distinction between the troubadour and the jogleur which was established in Provence probably soon spread to France and England. In any case it is probable that the poverty which forms the staple topic of the poems of Rutebeuf (*q.v.*) was the commonest lot of the minstrel.

Entries of payments to minstrels occur in the accounts of corporations and religious houses throughout the 16th century; but the art of minstrelsy, already in its decline, was destroyed in England by the introduction of printing, and the minstrel of the entertainments given to Elizabeth at Kenilworth was little more than a survival.

The best account of the subject is to be found in E. K. Chambers's *Medieval Stage* (1903), i. 23-86 and ii. 230-266. See also L. Gautier in *Épopées françaises* (vol. ii., 2nd ed., 1892); A. Schultz, *Das höfische Leben zur Zeit der Minnesinger* (2nd ed., 1889); T. Percy, *Reliques of English Poetry* (ed. H. B. Wheatley, 1876); J. Ritson, *Ancient English Metrical Romances* (1802); J. J. Jusserand, *English Wayfaring Life in the Middle Ages* (4th ed., 1892).

MINT, botanically *Mentha*, a genus of labiate plants, comprising about twenty species of perennial herbs, widely distributed throughout the temperate and sub-tropical portions of the globe, but chiefly in the temperate regions of the Old World. The species have square stems, opposite, aromatic leaves, and a stoloniferous creeping rootstock. The flowers are arranged in axillary clusters (cymes), which either form separate whorls or are crowded together into a terminal spike. The corolla is usually small and of a pale purple or pinkish colour; it has four nearly equal lobes, and encloses two long and two short stamens. Nearly three hundred intermediate forms have been named and described. Many of these varieties are permanent, in consequence of being propagated by stolons.

In Britain ten species are indigenous or naturalized. *Mentha viridis*, or spearmint, grows in marshy meadows, and is the species commonly used for culinary purposes; it is distinguished by its smooth, sessile leaves and lax tapering flower-spikes. It is probably a cultivated race of the next species, *Mentha sylvestris*, or horsemint, which chiefly differs from the above in its coarser habit and hairy leaves, which are silky beneath, and in its denser flower-spikes. This plant is supposed to be the mint of Scripture, as it is extensively cultivated in the East; it was one of the bitter herbs with which the paschal lamb was eaten. *M. rotundifolia* resembles the last in size and habit, but is distinguished by its rounded wrinkled leaves, which are shaggy beneath, and by its lanceolate bracts. The last two species usually grow on damp waste ground. *M. aquatica* grows in ditches, and is easily recognized by its rounded flower-spikes and stalked hairy leaves. *M. piperita*, or peppermint (*q.v.*), has stalked smooth leaves and an oblong obtuse terminal spike of flowers; it is cultivated for its volatile oil. *M. pratensis* belongs to a group which have the flowers arranged in axillary whorls and never in terminal spikes; it otherwise bears some resemblance to *M. viridis*. *M. sativa* grows by damp roadsides, and *M. arvensis* in cornfields; they are distinguished from *M. pratensis* by their hairy stalked leaves, which in *M. arvensis* are all equally large, but in *M. sativa* are much smaller towards the apex of the stem. *M. Pulegium*, commonly known as pennyroyal, more rarely as fleamint, has small oval obtuse leaves and flowers in axillary whorls, and is remarkable for its creeping habit and peculiar odour. It differs from all the mints above described in the throat of the calyx being closed with hairs. It is met with in damp places on grassy commons, and was formerly popular for medicinal purposes.

All the genus *Mentha* abound in a volatile oil, contained in resinous dots in the leaves and stems. The odour of the oil is similar in several species, but is not distinctive, the same odour occurring in varieties of distinct species. Thus the peppermint flavour is found in *M. piperita*, in *M. incana*, and in Chinese and Japanese varieties of *M. arvensis*. Other forms of the last-named species growing in Ceylon and Java have the flavour of the common garden mint, *M. viridis*, and the odour is found in *M. sylvestris*, *M. rotundifolia* and *M. canadensis*. A bergamot scent is met with in a variety of *M. aquatica* and in forms of other species. Most mints blossom in August.

The name mint is also applied to plants of other genera, *Monarda punctata* being called horsemint, *Pycnanthemum linifolium* mountain mint, and *Nepeta cataria* catmint.

MINT (Lat. *moneta*; Mid. Eng. *mynt*), a place where coins are manufactured with the authority of the state. Coins are pieces of metal, of weight and composition fixed by law, with a design upon them, also fixed by law, by which they are identified, their value made known and their genuineness certified. The origin of the word "mint" is ascribed to the manufacture of silver coin at Rome in 269 B.C. at the temple of Juno Moneta.[1] This goddess became the personification of money, and her name was applied both to money and to its place of manufacture. Metals were used for money at an early stage of civilization, and are well suited to the purpose, owing to their great intrinsic value and their durability, indestructibility, divisibility and rarity. The best metals for coinage are gold, silver, platinum, copper, tin, nickel, aluminium, zinc, iron, and their alloys; certain alloys of gold, silver, copper and nickel have the best combination of the required qualities.

History of Minting.—The earliest metallic money did not consist of coins, but of unminted metal in the form of rings and other ornaments or of weapons, which were used for thousands of years by the Egyptian, Chaldean and Assyrian Empires (see NUMISMATICS). According to Herodotus, the first mint was probably that established by Gyges in Lydia towards the end of the 8th century B.C. for the coining of gold, silver and electrum, an

[1] Lenormant, *La Monnaie dans l'antiquité*, i. 82.

alloy of gold and silver found in a natural state.[1] Silver was coined in the island of Aegina soon afterwards. The art of coining was introduced by the Greeks into Italy and other countries bordering on the Mediterranean and into Persia and India. Subsequently the Romans laid the foundations of modern minting. Coining originated independently in China at a later date than in the western world, and spread from China to Japan and Korea. Coins may be made by casting in moulds or by striking between engraved dies. The Romans cast their larger copper coins, in clay moulds carrying distinctive markings, not because they knew nothing of striking, but because it was not suitable for such large masses of metal. Casting is now used only by counterfeiters. The most ancient coins were cast in bullet-shaped or conical moulds and marked on one side by means of a die which was struck with a hammer. The "blank" or unmarked piece of metal was placed on a small anvil (*ambos*), and the die was held in position with tongs. The reverse or lower side of the coin received a rectangular mark made by the sharp edges of the little anvil. Subsequently the anvil was marked in various ways, and decorated with letters and figures of beasts, and later still the ambos was replaced by a reverse die. The spherical blanks soon gave place to lenticular-shaped ones. The blank was made red-hot and struck between cold dies. One blow was usually insufficient, and the method was similar to that still used in striking medals in high relief, except that the blank is now allowed to cool before being struck. With the substitution of iron for bronze as the material for dies, about A.D. 300, the practice of striking the blanks while they were hot was gradually discarded.[2] In the middle ages bars of metal were cast and hammered out on an anvil. Portions of the flattened sheets were then cut out with shears, struck between dies and again trimmed with shears. A similar method had been used in Egypt under the Ptolemies (*c.* 300 B.C.) but had been forgotten. Square pieces of metal were also cut from cast bars, converted into round disks by hammering and then struck between dies. In striking, the lower die was fixed into a block of wood, and the blank piece of metal laid upon it by hand. The upper die was then placed on the blank, and kept in position by means of a holder round which was placed a roll of lead to protect the hand of the operator while heavy blows were struck with a hammer. An early improvement was the introduction of a tool resembling a pair of tongs, the two dies being placed one at the extremity of each leg. This avoided the necessity of readjusting the dies between blows, and ensured greater accuracy in the impression. Minting by means of a falling weight (*monkey press*) intervened between the hand hammers and the screw press in many places. In Birmingham in particular this system became highly developed and was long in use. A. Olivier introduced screw presses for striking coins, together with rolls for reducing the cast bars and machines for punching-out round disks from flattened sheets of metal, in Paris in 1553. After being discarded in 1585, except for making medals, they were reintroduced by J. Varin in 1640 and the practice of hammering was forbidden in 1645.[3] In England the new machinery was tried in London in 1561, but abandoned soon afterwards; it was finally adopted in 1662, although the old pieces continued in circulation until 1696. At first the rolls were driven by workmen by means of cranks, but later they were worked by horses, mules or water-power. Steam-power was applied to them by Matthew Boulton and Watt in Birmingham in 1788, and was adopted by the Royal Mint, London, in 1810. Recently the practice of driving rolls by electricity has been growing, the advantage being that each pair of rolls can be driven independently without the intervention of cumbrous shafting. Boulton and Watt's screw press, invented in 1788 and used at the Royal Mint until 1881, was worked by atmospheric pressure applied to a piston. The piston was in communication with a vacuum vessel from which the air had been pumped by steam power.

History of British Mints.—In Britain there are evidences of the existence of mints before the arrival of the Romans. The Romans at first imported their coins, and no Roman mints were established until about the end of the 3rd century, when coins were being struck at London and Colchester.[4] In Anglo-Saxon times Athelstan appears to have been the first monarch who enacted regulations for the mints.[5] He promulgated laws about the year 928, appointing a large number of "moneyers" or "mynteres," London being assigned eight, Canterbury seven, other important towns various numbers and all smaller boroughs one moneyer each. The necessity for so many mints lay in the imperfect means of communication. At an early period, probably about A.D. 1000, the dies were made in London and issued to the other mints. The moneyers, who were elected by the burgesses, were responsible for the manufacture of the coin, and according to Madox were liable at the time of Henry II. to be summoned to Westminster to take part in the trials of the pyx.[6] If there was any deficiency in the weight of the fineness of the coin the moneyers were punished as traitors. These moneyers appear to have been abolished about 1180,[7] when officers were appointed to supervise the coinage on behalf of the king, and the name "moneyer" was applied to contractors who manufactured the coin under superintendence and were not responsible to the king for its weight and fineness. The moneyers continued to manufacture the coin of the realm until the year 1850, when the work was entrusted to civil servants. In the reign of Henry III. the principal officers of the Mint were the master, who manufactured the coin under a contract, the warden or paymaster who acted on behalf of the Crown, the assay master (also a king's officer) who was responsible for the fineness of the coin, the cuneator or superintendent of the engravers of the dies, and the moneyer. One of the most important duties of the warden was the collection from the contractor of the seigniorage which was claimed by the sovereign by virtue of his prerogative as a source of revenue to the Crown. In 1718 Sir Isaac Newton was made master of the Mint, and in that capacity as contractor for the coinage he amassed a considerable fortune.[8] As the work of the Mint became more extensive and more complicated other officers were added and their duties were varied from time to time. The present administration of the English Mint is based on arrangements made in 1870, when the establishment was re-organized. The office of master of the Mint is held by the chancellor of the exchequer for the time being, without salary, but the actual administrative work of the department is entrusted to the deputy master and comptroller. The receipt of bullion and the delivery of coin from the Mint is under the charge of the chief clerk, the manufacture of coin is in the hands of the superintendent of the operative department, and the valuation of the bullion by assay, and matters relating to the fineness of the coin are entrusted to the chemist and assayer. The date of the establishment of the Mint in the Tower of London is unknown. There is a reference to it dated 1229 and a clear reference dated 1329.[9] According to Ruding, there were over fifty mints in the reign of Edward the Confessor. After the Norman Conquest the mints increased to about seventy, a greater number than now exists in the world, but they were gradually reduced and in the reign of Edward I. there were only twelve. Ruding enumerates 128 mints operated at various times in the United Kingdom, including some established by usurpation, as in the reign of Stephen by certain barons, and also mints established by grants to ecclesiastics to be worked for their own profit. The provincial mints were all closed just before the reign of Mary, who coined in London only. Charles I. set up small mints in various towns, and for the great re-coinage in the reign of William III. mints were established at York, Chester, Exeter, Bristol and Norwich, but were soon abandoned. Wood's copper money for Ireland and America was coined at Wolverhampton (1700–1722), and the tradesmen's tokens were struck at various towns. Copper coins were struck by Boulton at Soho, Birmingham,

[1] *Op. cit.* i. 136. Herodotus i. 94.
[2] E. Dumas, *L'Émission des monnaies décimales de bronze*, p. 14.
[3] Ibid. p. 19.
[4] H. A. Grueber, *Coins of Great Britain and Ireland*, p. viii.
[5] Rogers Ruding, *Annals of the Coinage*, 3rd ed. ii. 135.
[6] Grueber, *op. cit.* p. xxv.
[7] Ibid. p. xxvi.
[8] Ruding, *op. cit.* i. 35.
[9] Ibid. ii. 192, 194.

in 1788, and a colonial bronze coinage was executed at this establishment as recently as the year 1875. There is another mint in Birmingham worked by a private company ("The Mint, Birmingham, Limited"), where coinages for foreign governments are executed and in addition silver and bronze colonial coins are occasionally manufactured under the supervision of the London Mint. The existing London Mint was erected on Tower Hill in 1810. Minting in Scotland began in the reign of David I. (1124–1153) and ceased in 1709, two years after the Act of Union, in which it had been expressly stipulated that a mint should be continued in Scotland.[1] Coinage in Dublin began in Anglo-Saxon times and came to an end in the reign of William III.[2] The other Irish mints were of little importance.

British Dominions.—Turning to mints in British Dominions beyond the Seas, Ruding enumerates twenty-six mints in France and Flanders used by British monarchs between 1186 and 1513, and Anglo-Hanoverian coins were struck at Clausthal, Zellerfeld and Hanover in the period 1714–1837. In India[3] the earliest English mint was that at Madras which was bought by the East India Company in 1620, reorganized more than once and finally closed in 1869. The Calcutta mint was established by the East India Company in 1757, but other mints in Bengal continued to be used till about 1835, when the Calcutta mint was rebuilt. The Bombay mint was set up about the year 1671, but the coins were made by hammer and anvil until 1800. The Calcutta and Bombay mints are still in operation. A mint was opened in Hong-Kong in 1866 but was closed in 1868 and the machinery sold to Japan. In Australia there are three mints, Sydney, opened in 1855, Melbourne, opened in 1872, and Perth, opened in 1899. Up to 1909 only sovereigns and half-sovereigns were struck at these establishments, but in 1910 arrangements were made for a Commonwealth silver coinage. A mint at Ottawa was opened in 1908 for the manufacture of all Canadian coins as well as English sovereigns.

Other Countries.—In the United States the Philadelphia mint was opened in 1792, but only manual or horse power was used until 1836, when steam was introduced. Other mints are now in operation at New Orleans, San Francisco and Denver. In most European countries a single mint situated at the capital is found to be sufficient, but there are six mints in the German Empire and two in Austria-Hungary. In China 26 mints were at work in 1906. There are also mints at Osaka, Bangkok and Teheran, and the Seoul mint was at work in 1904. In Mexico 11 mints formerly existed, but one only, in the city of Mexico, remained open in 1907. In South America there are mints at Lima, Santiago, Buenos Ayres and Tegucigalpa. No mints are in operation in Africa. In all there are nearly 70 mints in the world.

The Supply of Bullion to Mints.—In England, in the middle ages, the king was accustomed to send in to the mint the produce of his own silver mines, and claimed the exclusive privilege of purchasing the precious metals. The right of levying seigniorage, however, was sometimes waived by the king to encourage his subjects to bring gold and silver to the mint, and several instances are recorded in which the aid of alchemists was called in to effect the transmutation of baser metals into gold. Seigniorage was abolished for both gold and silver in 1666, when it was provided that no charge should be made at the Mint for coining and assaying. Finally in 1816 the free coinage of silver was brought to an end. At present all gold bullion brought to the Mint is weighed and portions are cut off for assay. The amount of gold in standard ounces (916·6̇ fine) corresponding to the "imported" bullion is thus ascertained, and on the application of the importer the gold is coined and delivered to him in the form of sovereigns and half-sovereigns at the rate of £3, 17s. 10½d. per standard ounce troy, no deduction being made for wastage, seigniorage, the purchase of alloy metal, or the expense of manufacture. As a considerable time elapses between the receipt of bullion by the Mint and the delivery of the coin, it is generally more profitable for the holder of gold bullion to sell it to the Bank of England or dispose of it in some other way. The result is that the gold presented for coinage is almost always sent from the Bank of England, which suffers no loss of interest during the coinage of the bullion, because bank-notes have already been issued against it. Silver bullion, and the copper, tin and zinc required to make up bronze, are bought by the Mint and manufactured into coin, which is kept in stock and issued as it may be required. One ounce of standard silver, which contains 925 parts of silver and 75 of copper per 1000, is converted into 5s. 6d. in silver coin, whatever may be the market price of silver bullion. This seldom exceeded 30d. per ounce in the years 1893–1907. Coinage bronze consists of copper 95 parts, tin 4 parts and zinc 1 part, and a ton yields £448 in pence or £373, 6s. 8d. in halfpence or farthings. The difference between the nominal value of silver and bronze coin and its intrinsic value is retained by the state to cover the expenses of manufacture and as a source of profit. It corresponds to the seigniorage levied by the king on all coinages down to the reign of Charles II. In return, the Mint receives at its nominal value for recoinage the worn gold and silver coin which is withdrawn from circulation by the Bank of England and some other banks. In spite of the cost of this recoinage, however, the profit on the issue of new silver and bronze usually exceeds in each year the total expenditure of the Mint. Gold and silver are delivered in a refined state suitable for immediate conversion into coin. In general, only old coin, ingots resulting from the melting of coin, and "fine" ingots are received. Fine gold ingots (the "bar gold" of commerce) are usually about 400 oz. troy in weight, and contain from 990 to 999·5 parts of gold per 1000, the remainder being chiefly silver. Fine silver ingots usually weigh from 1000 to 1200 oz. troy and contain from 995 to 999 parts of silver per 1000. The ingots are valued by weighing and assaying, and a calculation is made as to the amount of copper required for melting with them to produce the standard alloy. The two standard alloys consist respectively of gold 916·6̇, copper 83·3̇ and of silver 925, copper 75. All gold coins received at the Bank are weighed on automatic balances (see below) and those below the lowest legal current weight are separated. The lowest current weight is 122·5 grains for sovereigns and 61·125 grains for half-sovereigns corresponding to losses by wear of about 0·6% and 0·8% respectively. The average age on withdrawal is about 24 years for sovereigns and 15 years for half-sovereigns. Silver coins are not weighed but are selected for withdrawal when they present a worn appearance. The average deficiency in weight of worn silver coin received at the Mint is from 8 to 10%, and the mean age somewhat less than 50 years. In European mints generally little difficulty is experienced in procuring refined gold and silver for coinage. In Australia, the United States, Japan and some other countries, the Mints receive unrefined gold from the mines and refine it before it is coined. A charge for refining is made in all cases. A refinery was attached to the London Mint from 1816 to 1851, but was then let on lease and left to private enterprise. The operations employed in the manufacture of gold and silver coin are as follow:—

(1) Melting the metal and casting it into bars. (2) Rolling the bars into strips or "fillets." (3) Cutting out disks or blanks from the fillets. (4) Adjusting the weight of the blanks (this is omitted in some mints). (5) "Marking" or edge-rolling the blanks to produce a raised rim or to impress a design on the edge. (6) Annealing the blanks and (in some mints) cleaning them in acid. (7) Striking the blanks between dies surrounded by a collar. (8) Weighing each coin. Among the incidental operations are (*a*) the valuation of the bullion by weighing and assaying it; (*b*) "rating" the bullion, or calculating the amount of copper to be added to make up the standard alloy; (*c*) recovering the values from ground-up crucibles, ashes and floor sweepings (the Mint "sweep"); (*d*) assaying the melted bars; (*e*) "pyxing" the finished coin or selecting specimens to be weighed and assayed; (*f*) "telling" or counting the coin.

Melting.—Formerly bullion was melted in crucibles made of refractory clay, but they are liable to crack and require careful handling

[1] Grueber, *op. cit.* p. liv. [2] Ruding, *op. cit.* ii. 245.

[3] W. J. Hocking, *Catalogue of Coins in the Royal Mint*, i. 272, 275 and 279.

These were succeeded by iron crucibles, especially for melting silver, and these have now been generally replaced by graphite (plumbago) crucibles made of a mixture of clay and graphite. Good graphite crucibles can be used many times in succession if they are heated gradually each time, but they are usually discarded after about fifteen or twenty meltings. At the Royal Mint gold is melted in crucibles about 10 in. in height and $8\frac{1}{2}$ in. in diameter at the widest part. The charge is from 1200 to 1300 oz. (37·3 to 40·5 kilograms) of metal. The furnace is 12 in. square and 2 ft. deep from the fire-bars to the cover. An old crucible is cut off about 2 in. from the bottom and the bottom piece is inverted and placed on the fire-bars as a support for the crucible. The "muffle," a graphite cylinder 6 in. in height, is placed on the crucible to allow room for long bars to be melted in the crucible and to prevent the surrounding coke from falling into it. The flue, of about 5 in. square, communicates with a stack 60 ft. high. In many mints the flues pass into condensing chambers where volatilized gold and silver are recovered. The crucible is at a red heat when the gold is charged in, the copper being added last, and a graphite lid put on the crucible to check loss by volatilization. The charge is completely melted in about half an hour, and it is then thoroughly mixed by stirring with a graphite rod. The crucible is then lifted out by circular tongs suspended in such a way that two men can take part in the operation. The contents are poured by hand into moulds which are contained side by side in an iron carriage running on wheels, fig. 1, OP. The molten gold, which is of a pale green colour, solidifies at once in the iron moulds, and the bars can be taken out immediately. Bars from which sovereigns are to be coined are 22 in. long, $1\frac{5}{8}$ in. wide and $\frac{1}{2}$ in. thick, and about seven such bars are cast from one pot. The rough edges of the bars are removed by a circular revolving file, and the hollow ends are cut off. Pieces are cut out for assay, and the bars are then ready for rolling. The amount of gold melted in an ordinary day's work is two tons to two and a half tons, of the value of £250,000 to £300,000. For silver larger crucibles are used, containing about 5000 oz. troy (155 kilograms). They are heated in circular furnaces 21 in. in diameter and lifted out with circular tongs suspended from a travelling crane which is worked by electricity. The crucible is placed in the pouring cradle, which has been in use since 1816, and is shown in fig. 1. Here A is the iron cover surrounding the furnaces, B is the revolving lid of a furnace, and C is the flue, common to two furnaces and leading to the stack. The handle D, acting through the gear wheels E, F, G and H, turns the cogwheel K, which moves the curved rack of the cradle and tips the crucible M. The molten metal is poured into the moulds N, which are carried on wheels running on rails Q. The parts of the range of moulds are brought tightly together and held in position by the bars O and the screw P, and when one mould is filled the carrier is moved forward on its rails by wheels worked by a handle also shown in the figure. In some other mints still larger crucibles are used, containing various amounts up to about 1000 kilograms or over 30,000 oz. In foreign mints the molten metal is generally transferred from the crucible to the moulds by dipping crucibles or iron ladles covered with clay. Gas is used as fuel for the melting furnaces at Philadelphia. It is cleaner than coke and is said to save time and to reduce the loss of the precious metals. At Denver and Ottawa the fuel used is "first distillate" oil, which is found to be cheaper than either naphtha or gas. The oil is pumped from buried tanks and warmed to about 90° F. before it reaches the burners at the furnaces. At the Denver mint the crucibles are used for from twelve to fifteen meltings with oil fuel, whereas they were soon destroyed when gas was employed. A charge of 6000 oz. of gold is melted in about an hour. The melting losses amount to about 0·2 per 1000 of gold and 0·6 per 1000 of silver in the Royal Mint. The losses are caused by volatilization, by the absorption of metal by the crucible, stirring rod, &c., and by occasional projection of particles from the pot into the furnace. The ash-pit is lined with iron plates to facilitate the recovery of metal accidentally spilt. All crucibles and other materials which might contain precious metal are ground up and washed in a pan, and the pannings together with a selection from the floor sweepings are remelted. The residues (the Mint "sweep") are sold to refiners or ore-smelters.

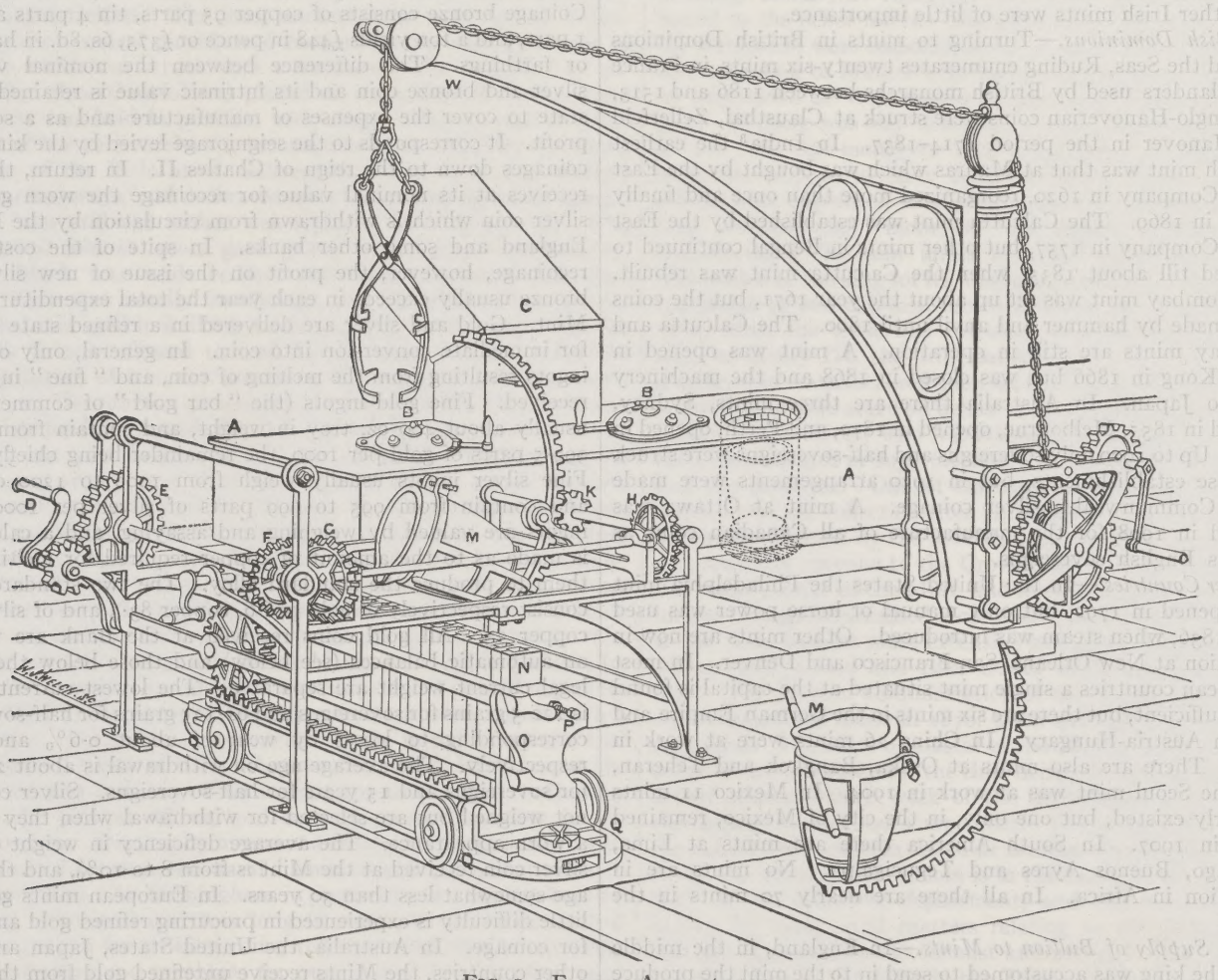


FIG. 1.—Furnace Apparatus.

Rolling.—The cast bars are reduced to the thickness of the coin by repeated passages between rolls. These are cylinders of cast iron or steel from 6 in. to 15 in. in diameter set parallel to one another with a small interval between, and revolved by electric or steam power. They are divided into breaking-down and finishing rolls, the latter being of smaller diameter than the former. The power is usually transmitted through toothed wheels, each roll being driven independently in some cases, while sometimes power is applied to the lower roll only, the upper roll being coupled to it. The

power required for breaking down mint bars amounts to from 25 to 35 h.p. The bars are fed to the rolls by hand. Heavy pinches are applied at first, the space between the rolls being diminished by a hand-screw after each passage of the bars through them. When the bars are nearly to gauge, light pinches are given, the power required by finishing rolls being about 5 h.p. only. The reduction in thickness of the bars is accompanied by a slight increase in their width and a very great increase in their length, so that it is generally necessary to cut partly rolled bars into two parts to keep them of convenient dimensions. By repeated passages through the rolls the bars are hardened, and to facilitate further reduction they are usually softened by *annealing* before being passed to the finishing rolls. In some mints the fillets are annealed frequently, the fillets for one-mark pieces at the Berlin mint, for example, being annealed four times in the course of rolling. In this case the bars are reduced from $5\frac{1}{2}$ mm. in thickness to $1\frac{1}{4}$ mm. by being passed thirteen times through the rolls. At the Vienna mint the practice has been to anneal silver bars after each passage through the rolls. On the other hand, in the United States mints, the use of very carefully refined metal has made it possible to discontinue the annealing of partly rolled bars. In the Royal Mint silver bars are annealed once during rolling by passing through a Bates & Peard gas furnace. The fillets are placed on an endless chain which moves slowly through the furnace, returning underneath. At each end of the furnace is a trough of water which covers the furnace mouth, so that air is prevented from entering the furnace. The chain dips below the water, then rises into the furnace and passes down into the other trough on its way out. The result is that so long as the fillets are hot they are kept from contact with the air and blackening of the metal is prevented. In some mints the drag-bench or draw-bench is used after the rolls to equalize the thickness of the fillets. The fillet is drawn between two little steel cylinders which do not revolve and are held rigidly in position. The principle resembles that used in wire drawing. It was introduced by Sir John Barton at the Royal Mint in 1816 and was abandoned there in 1905. The thickness of the

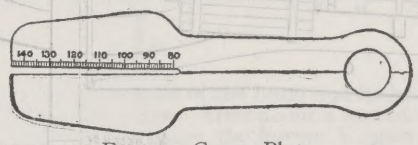


FIG. 2.—Gauge Plate.

fillets is measured by the gauge-plate shown in fig. 2. When they have been reduced to the correct thickness they are examined by the "tryer," who cuts out one or two blanks from each fillet with a hand machine and weighs them on a delicate balance. If the weight of the blank is slightly below the standard weight, a somewhat larger cutter is used, so that the blanks may be of correct weight. If the blank is too heavy the fillet may of course be passed through the rolls again.

Remedy.—The degree of accuracy required is indicated by the "remedy" allowance for weight, which is different for each coin, and is the maximum difference from the standard weight which is allowed by law. In the sovereign it is 0·2 grain or about 1·62 per 1000. As the mean thickness of a sovereign is 0·0466 in., the remedy for weight corresponds to a difference of less than $\frac{1}{10\,000}$ in. in the thickness of the fillet. The remedy for English silver coins varies from 2 grains or 4·58 per 1000 in the case of the crown, to 0·087 grain or 11·97 per 1000 in the case of the silver penny. The remedies for weight on foreign coins are in general greater than those allowed in the British Empire, averaging 2 per 1000 for gold coins. Reference may here be made to the similar working margin allowed in respect of the fineness of gold and silver. In England the remedy for fineness is 2 per 1000 on gold coins and 4 per 1000 on silver coins above and below the legal standard. Thus gold coins would be within the limits if they contained between 914·6 and 918·6 parts of gold per 1000. Remedies are intended to cover accidental variations from the exact standard and are now generally used only in this way. In former times, however, advantage was sometimes taken of the remedy as a means of profit. In the reign of Queen Elizabeth, the master of the Mint, finding the allowance under his contract to be insufficient, availed himself of the remedy on the silver coinage, which amounted to $6\frac{1}{4}$d. on the pound troy, or about 8·7 per 1000.

Cutting Blanks.—The cutting machine used in the Mint is shown in fig. 3. The revolution of an eccentric A causes two short steel cylinders or cutters mounted on a block of iron B, suitably guided, to enter two holes in a plate fixed to the bed of the machine. When the fillet FF is brought above the holes, the cutters descend and force disks of metal through the holes. After each descent of the cutters, the fillet is advanced by small gripping rolls C C′ C″ worked by a ratchet wheel E driven from the shaft which bears the eccentric A. The disks fall down the tube G to a receptacle on the floor. The cutters are so placed as to remove blanks in the manner shown in fig. 4, this arrangement leaving less "scissel" or residual metal than any other. In the case of very large silver coins only one blank is cut in the width of the fillet, but bronze fillets are made wider so that three penny blanks are cut out at each stroke of the machine. The cutting machines at the Mint work at 160 revolutions per minute, so that each of the eleven machines would be capable of cutting 19,200 blanks in an hour if it could be fed continuously. The scissel, which amounts to about 30% of the metal operated on, is returned in bundles to the melting house.

Marking.—The blanks are then passed to an edge rolling machine, by which they are thickened at the edge so as to form a rim to protect the finished coin from wear. This operation is called marking, because originally the edges

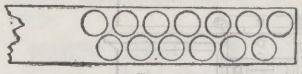


FIG. 4.

were not only thickened but were also marked with an inscription. This is still done in the case of many foreign coins. The letters are sometimes sunk and sometimes raised. Like the graining or "milling" on the edge of many coins, the inscriptions were intended to put a stop to the practice of clipping and filing coins, which was prevalent in the 16th and 17th centuries. They also render the manufacture of counterfeit coin more difficult. At the Royal Mint the blanks are passed between the parallel faces of a revolving steel plate and fixed block. The plate has a circular groove in its face and the block has a corresponding curved groove. The blank passes between these grooves. The distance between the block and the plate is adjusted so as to be slightly less than the diameter of the blank, and the result is that the edge of the blank is thickened and its diameter reduced before it escapes from the machine. About 720 blanks are passed through this machine per minute. In marking machines in some foreign mints the groove is in the periphery of the revolving wheel, and the grooved block is curved (fig. 5).

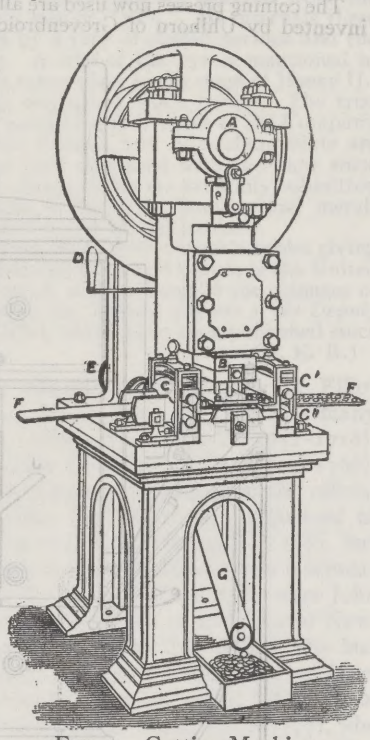


FIG. 3.—Cutting Machine.

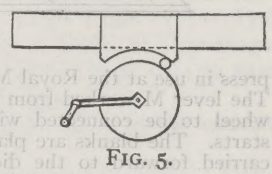


FIG. 5.

Annealing and Blanching the Blanks.—The blanks are next softened by annealing, and are then thoroughly cleaned before being passed to the coining presses. In England gold and copper blanks are protected from oxidation, and after their passage through the furnace are merely washed in colanders with water and dried with sawdust in a rotating drum. Silver blanks, however, are passed through rotary gas furnaces in which no attempt is made to exclude the air. The blanks are charged into a hopper at one end of the furnace and conveyed towards the other end by a revolving Archimedean screw. The blanks fall through an aperture after having been heated for a few minutes. They are at a dull red heat and are allowed to cool gradually in the air and become blackened by the formation on the surface of a film of oxide of copper. This is removed by solution in hot dilute sulphuric acid and a layer of pure frosted silver is left on the surface, which appears dead white in colour, and has lost its metallic lustre. The operation is called "blanching." A similar method was formerly used for gold coins in England and is still employed in some mints. The removal of part of the copper from the blank raises the percentage of silver contained in them and this is allowed for by adding an equivalent amount of copper to the metal when it is melted. The amount of copper removed from silver blanks containing 900 to 925 parts of silver per 1000 is from 0·6 to 1·0 per 1000. The process will probably be abandoned as soon as the tarnishing of the metal during rolling and annealing can be avoided.

Coining Press.—The blanks are converted into coin by receiving an impression from engraved dies. Each blank is placed on the lower of two dies and the upper die is brought down forcibly upon it. The pressure causes the soft metal to flow like a viscous solid, but its lateral escape is prevented by a collar which surrounds the blank while it is being struck. The collar may be plain, or crenated ("milled"), or engraved with some device. In the last case the collar must be made in two or more pieces, as otherwise the coin could not be removed without injury. The collar for striking English crown pieces is made in three sections now that raised lettering is put on the edge of the coin. Sunk letters, such as occur on the edges

of many foreign coins, are put on by the marking machine, and a plain collar is used in striking.

The coining presses now used are all modifications of the lever press invented by Uhlhorn of Grevenbroich near Cologne in 1839. The

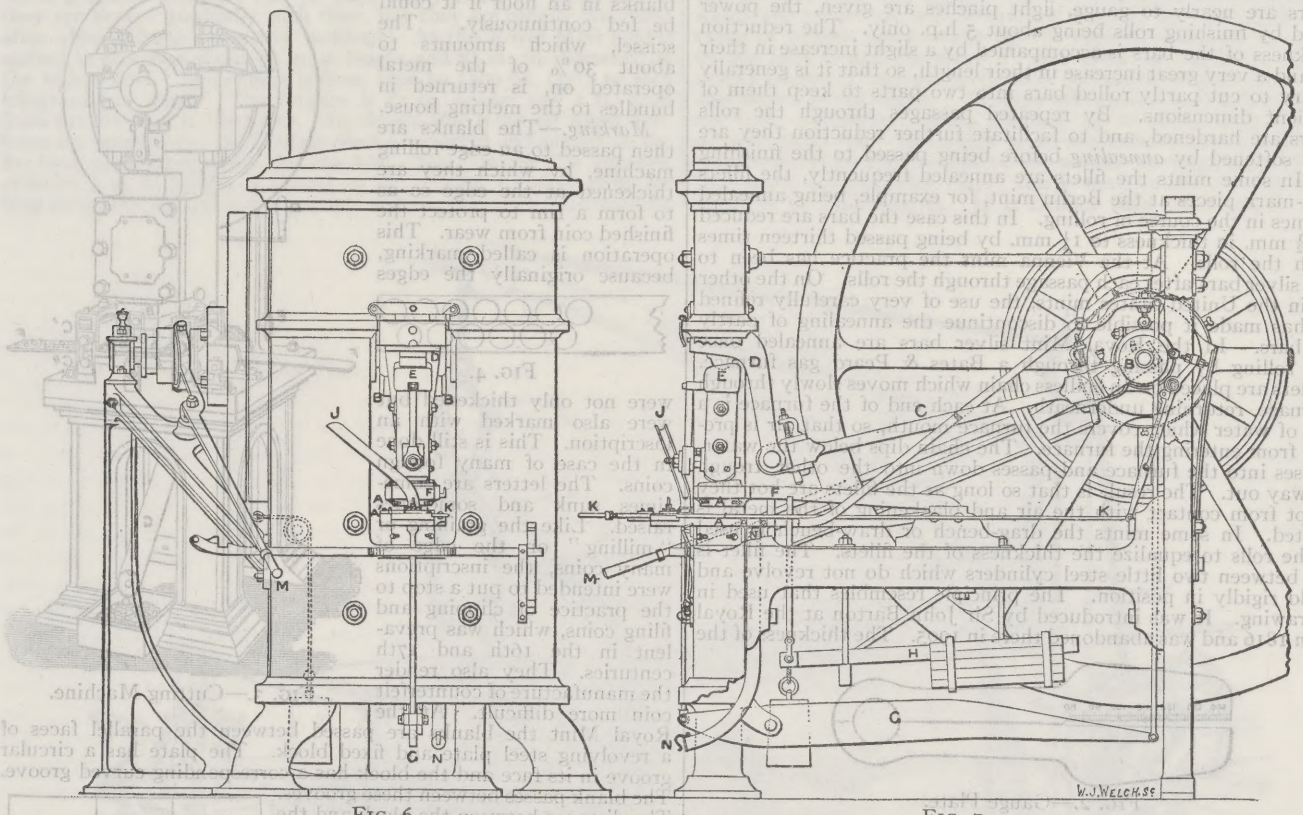


FIG. 6. FIG. 7.

press in use at the Royal Mint since 1882 is shown in figs. 6 and 7. The lever M worked from the front of the machine causes the fly-wheel to be connected with the driving-wheel and the machine starts. The blanks are placed in the slide J and the lowest one is carried forward to the die in two successive movements of the "layer-on" K, a rod working backwards and forwards on a horizontal plate and actuating the finger L, fig. 8. The lower die is firmly fixed

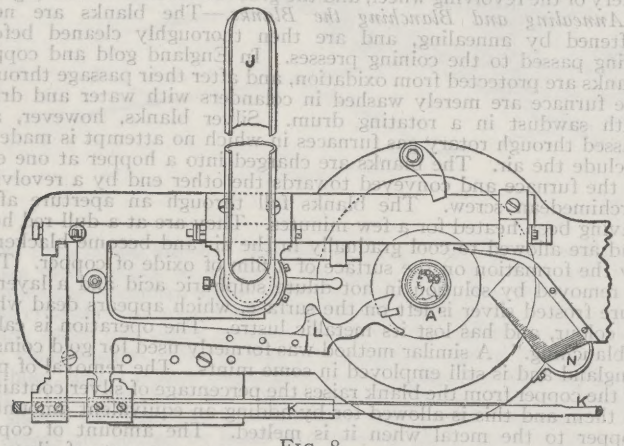


FIG. 8.

to the bed of the machine, and the blank is placed exactly upon it. The collar A' is then raised by the lever G so as to encircle the blank, and the upper die which is held at A is brought down. This is done by the little crank B on the axle of the fly-wheel, acting through the rod C, and the bent lever D, which forms a toggle-joint at E with the vertical piece of metal below it. The straightening of the toggle-joint when C is pushed forward forces A down to strike the coin. The reverse movement of D lifts up the upper die and the collar drops simultaneously so that its upper surface is level with the face of the lower die on which the finished coin lies. Another blank moved on by the finger L pushes off the finished coin which falls down the tube N. The diagram, fig. 9, shows the relative position of the dies and levers more clearly. The dies and collar are shaded. The presses at the Mint strike from 90 to 125 coins per minute, most of them working at the rate of 110 coins per minute. There are 19 presses and it is possible with these to strike between 700,000 and 800,000 pieces in an ordinary working day.

Weighing the Coins.—Gold and silver coins are examined and tested by ringing, and each coin is then weighed separately by being passed over delicate automatic balances. The first automatic balance for weighing single coins was introduced at the Bank of England in 1843, and was designed by William Cotton, the deputy governor of the Bank. In 1851 these balances, improved by Richard Pilcher, were introduced at the Royal Mint, and modifications of them are now used at most foreign mints. For mint use it is necessary that they shall distinguish between "light," "heavy" and "good" coins which do not differ from standard by more than the small weight known as the "remedy" (see above). The balances used in the Royal Mint were further improved by J. T. Butler in the year 1889. The balance consists essentially of a beam with two scale pans, one for the coin and the other for the counterpoise. The beam is released and in the course of a second or so takes up a certain position dependent on the relative weights of the coin and counterpoise. Its position is then fixed by an automatic grip, and the coin falling down a shoot enters one of three compartments of a box, according to the position of the beam when it is arrested. The chief working parts are shown in fig. 10. The beam A is of steel made in one piece,

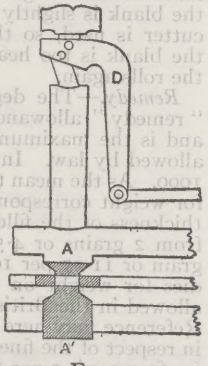


FIG. 9.

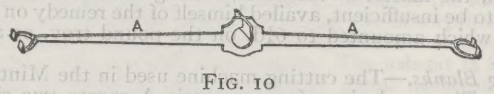


FIG. 10

about 11 in. long. Its centre and end knife edges are shown in fig. 11. The scale pan for the coin is shown in fig. 12. B is the pan on which the coin rests, at a point above the beam. The coins are placed in a rouleau in the hopper C and the lowest one is pushed on to the pan B by a slide not shown in the figure. While the coin is being moved the hanger D is held firmly by the forceps E to prevent the pan from being pushed sideways. The forceps are then opened and the beam released, but at this moment the levelling bar F is allowed to drop momentarily by a bent lever G acting on the pin G', until the ends of F press down on a stirrup in each hanger at H, H. This brings the beam to a horizontal position. The lever G at once

lifts the bar F again by acting on the pin G′ so that the bar F does not touch the stirrups at H and the beam and hangers are free to move. The coin is balanced by the brass counterpoise J on the left-hand hanger and by little weights made of wire attached to the right-hand hanger at K. If the coin is heavier than the lowest legal weight (that is, the standard weight less the remedy) the right-hand side of the beam begins to fall and the left-hand one is raised. This movement proceeds until the stirrup L below the left-hand hanger is raised far enough to touch the rod M, which is equal in weight to twice the remedy. The movement is then stopped provided that the weight of the coin is not greater than the standard weight plus the remedy. If it is heavier than this, it raises the

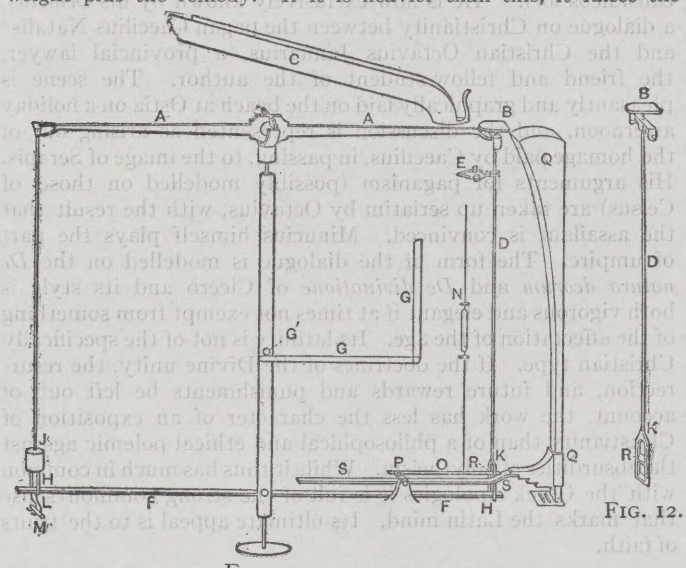


FIG. 11.

FIG. 12.

weight M, and the movement of the beam and its hangers proceeds farther in the same direction. After about a second from the time of the final release of the beam, the forceps E again close and the hanger D is held firmly in its new position. The rod N is then lowered and allows the indicating finger O, which is pivoted at P, to fall until it rests on the stirrup R, which is part of the hanger D. The extension of O holds down the right-hand end of the rod S which is also pivoted at P, and enables its end to fit into one of the three inverted steps on the bottom of the shoot Q. The position of the shoot is thus determined. It stops over one of three orifices in the bottom plate of the balance. If the coin is light the rod S fits into the uppermost step and the shoot stops over the right-hand slot. If the coin is heavy, S fits into the lowest step and the shoot stops over the left-hand slot. The middle step and slot are for coins within the remedy. The movement of the slide now pushes another coin forward, and the weighed coin is displaced by it and falls down the shoot, through one of the slots. Each slot leads into a separate compartment and the coins are consequently sorted into three classes, light, correct weight and heavy. The balance turns to 0·01 grain. The driving power is applied by shafting through a number of cams. In the Royal Mint both light and heavy coins are returned to the melting pot. The proportion of rejected gold coin varies with the quality of the bullion, and frequently exceeds 10%. The percentage of rejected silver is often no more than 1%. In most foreign mints the blanks are weighed by the automatic balances before being struck, and those which are too heavy are reduced by filing or planing. A workman sitting at a balance files the edges of the piece and weighs it until it is within the remedy. The blank is then again passed through the automatic balance and is sent forward to the coining press if the correctness of the weight is confirmed. Since 1870 no adjusting of the weight of coins has been attempted at the Royal Mint. Heavy blanks have also been reduced chemically by making them part of the anode in a cyanide bath through which a current of electricity is passed. Some metal from the surface of each blank then passes into solution, and the blanks are reduced in weight with remarkable uniformity. This system was introduced into the Indian mints in 1873.

Telling.—The coin is counted and packed into bags for despatch from the Mint. The counting or telling is now carried out in the case of bronze and silver coins by ingenious machines introduced in 1891. The coins are spread on an inclined table by hand. They slide down the table and enter a narrow passage where only one can pass at a time, jamming being prevented by the joggling action of an eccentric rotating disk at the entrance to the passage. The coins are then gripped by a pair of india-rubber driving wheels, which force them past the rim of a thin disk with notches in its edge to fit the coins. As the disk is thus made to revolve, the coins are pushed forward, and falling down a shoot are received in a bag. The machine can be set to deliver a certain number of coins, after which the counting wheel stops automatically.

Trial of the Pyx.—Periodical examinations of the coins issued by the Mint have been made from very early times in England by persons appointed by the Crown. Specimens are selected from the finished coin and are put into a box or "pyx." At intervals these coins are weighed and assayed by a jury of skilled persons and the results reported to the Crown. A trial of the pyx is mentioned in the Lansdowne MSS. as having taken place in the reign of Henry II., but the practice had probably originated much earlier. The trial is now held annually by a jury consisting of freemen of the Company of Goldsmiths. Coins from the London and Australian mints are examined. The Company has been entrusted with the duty since the time of James I. Coins of foreign mints are generally submitted to examination by a committee of eminent chemists and metallurgists whose report is published in the official journals.

A full account of the work of the Mint, with valuable tables giving the amount of the coinage of gold and silver and bronze in the United Kingdom and the colonies in detail, and a *résumé* of the coinages of foreign countries, will be found in the *Annual Reports of the Deputy Master and Comptroller of the Mint*, which have been published since 1870. (T. K. R.)

MINTO, EARLS OF. The Scottish border family of Elliot which has held the earldom of Minto since 1813 has had many distinguished members. Sir Gilbert Elliot, bart. (1651–1718), and his son and successor, another Sir Gilbert Elliot (1693–1766), were both celebrated Scottish judges and both took the official title of Lord Minto. The elder Sir Gilbert was sentenced to death for his share in the rising of the earl of Argyll in 1685, but was afterwards pardoned; the younger Sir Gilbert was a scholar and an agriculturist. Among the children of the latter were John Elliot (d. 1808), a naval officer, who served as governor of Newfoundland and was made an admiral; Andrew Elliot, the last English governor of New York; and the poetess Jean, or Jane, Elliot (*c.* 1727–1805), who wrote the popular ballad "Flowers of the Forest." The eldest son, Sir Gilbert Elliot (1722–1777), who became the third baronet in April 1766, was a member of parliament from 1753 to 1777, and a friend and follower of the earl of Bute. He filled several public offices, and Horace Walpole said he was "one of the ablest members of the House of Commons." His second son was the diplomatist, Hugh Elliot (1752–1830), who represented his country at Munich, at Berlin, at Copenhagen and at Naples. He was governor of Madras from 1814 to 1820, and he died on the 10th of December 1830.

See the *Memoirs of the Right Hon. Hugh Elliot*, by the countess of Minto (Edinburgh, 1868).

The third baronet's eldest son was GILBERT ELLIOT, 1st earl of Minto (1751–1814). About 1763 Gilbert and his brother Hugh were sent to Paris, where their studies were supervised by David Hume and where they became intimate with Mirabeau. Having passed the winters of 1766 and 1767 at Edinburgh University, Gilbert entered Christ Church, Oxford, and on quitting the university he was called to the bar. In 1776 he entered parliament as an independent Whig. He became very friendly with Burke, whom he helped in the attack on Warren Hastings and Sir Elijah Impey, and on two occasions was an unsuccessful candidate for the office of speaker. In 1794 Elliot was appointed to govern Corsica, and in 1797 he assumed the additional names of Murray-Kynynmond and was created Baron Minto. From 1799 to 1801 he was envoy-extraordinary to Vienna, and having been for a few months president of the board of control he was appointed governor-general of India at the end of 1806. He governed with great success until 1813. He was then created Viscount Melgund and earl of Minto. He died at Stevenage on the 21st of June 1814 and was buried in Westminster Abbey.

The earl's second son was Admiral Sir George Elliot (1784–1863), who as a youth was present at the battles of Cape St Vincent and the Nile, and who was secretary to the admiralty from 1830 to 1834. A nephew of the earl was Sir Charles Elliot (1801–1875) also an admiral, who took a prominent part in the war with China in 1840. Afterwards he was governor of Bermuda, of Trinidad and of St Helena.

GILBERT ELLIOT-MURRAY-KYNYNMOND, 2nd earl of Minto (1782–1859), eldest son of the 1st earl, was ambassador to Berlin from 1832 to 1834, first lord of the admiralty from 1835 to 1841 and lord privy seal from 1846 to 1852. His influence in the Whig party was partly due to the fact that his daughter, Frances, was the wife of Lord John Russell.

His son William Hugh, the 3rd earl (1814–1891), was the father of the 4th earl, GILBERT JOHN ELLIOT-MURRAY-KYNYNMOND (1845–), who joined the Scots Guards in 1867. In 1874, in the capacity of a newspaper correspondent, he witnessed the operations of the Carlists in Spain; he took service with the Turkish army in the war with Russia in 1877 and served under Lord Roberts in the second Afghan War (1878–79), having narrowly escaped accompanying Sir Louis Cavagnari Kabul. He acted as private secretary to Lord Roberts during his mission to the Cape in 1881; as military secretary to Lord Lansdowne during his governor-generalship of Canada from 1883 to 1885; and as chief of the staff to General Middleton in the Riel Rebellion in Canada (1885). Having succeeded to the earldom in 1891 he was appointed governor-general of Canada in 1898. His term of office (1898–1904) was distinguished by a visit of the prince and princess of Wales to the colonies. In 1905, on the resignation of Lord Curzon, Lord Minto was appointed viceroy and governor-general of India, retiring in 1910.

The 4th earl's brother, the Hon. Arthur Ralph Douglas Elliot (b. 1846), editor of the *Edinburgh Review*, was a member of parliament from 1880 to 1892 and again from 1898 to 1906, and from 1903 to 1906 he was financial secretary to the treasury. Sir Francis Edmund Hugh Elliot (b. 1851), a grandson of the 2nd earl, became British minister at Athens in 1903.

See Hon. G. F. S. Elliot, *The Border Elliots and the Family of Minto* (Edinburgh, 1897); the article INDIA; *History*; also the *Life and Letters of the first Earl of Minto, 1751–1806* (1874) and *Lord Minto in India, 1807–1814* (1880), both edited by the countess of Minto; and Sir J. F. Stephen, *The Story of Nuncomar and the Impeachment of Sir E. Impey* (1885).

MINTO, WILLIAM (1845–1893), Scottish man of letters, was born at Auchintoul, Aberdeenshire, on the 10th of October 1845. He was educated at Aberdeen University, and spent a year at Merton College, Oxford. He was assistant professor under Alexander Bain at Aberdeen for some years; from 1874 to 1878 he edited the *Examiner*, and in 1880 he was made full professor of logic and English at Aberdeen. In 1872 he published a *Manual of English Prose Literature*, which was distinguished by sound judgment and sympathetic appreciation; and his *Characteristics of English Poets from Chaucer to Shirley* (1874) showed the same high qualities. His other works include: *The Literature of the Georgian Era* (1894) edited with a biographical introduction by W. Knight a monograph on Defoe in the *English Men of Letters* series (1879); three novels of small importance, and numerous articles on literary subjects in the 9th edition of the *Encyclopaedia Britannica*. He died on the 1st of March 1893.

MINTURNAE, an ancient city of the Aurunci, in Italy, situated on the N.W. bank of the Liris with a suburb on the opposite bank 1½ m. from its mouth, at the point where the Via Appia crossed it by the Pons Tiretius. It was one of the three towns of the Aurunci which made war against Rome in 314 B.C., the other two being Ausona (see SESSA AURUNCA) and Vescia; and the Via Appia was made two years later. It became a colony in 295 B.C. In 88 B.C. Marius in his flight from Sulla hid himself in the marshes of Minturnae. The ruins consist of an amphitheatre (now almost entirely demolished, but better preserved in the 18th century), a theatre, and a very fine aqueduct in *opus reticulatum*, the quoins of which are of various colours arranged in patterns to produce a decorative effect. Close to the mouth of the river was the sacred grove of the Italic goddess Marica. It is still mentioned in the 6th century, but was probably destroyed by the Saracens, and its low site, which had become unhealthy, was abandoned in favour of that of the modern town of Minturno (known as Traetto until the 19th century), 459 ft. above sea-level. A tower at the mouth of the river, erected between 961 and 981, commemorates a victory gained by Pope John X. and his allies over the Saracens in 915. It is built of Roman materials from Minturnae, including several inscriptions and sculptures.

See T. Ashby in *Mélanges de l'École française de Rome* (1903), 413; R. Laurent-Vibert and A. Piganol, ibid. (1907), p. 495; G. Q. Giglioli, *Notizie degli Scavi* (1908) p. 396. (T. As.)

MINUCIUS, FELIX MARCUS, one of the earliest if not the earliest, of the Latin apologists for Christianity. Of his personal history nothing is known, and even the date at which he wrote can be only approximately ascertained. Jerome (*De vir. ill.* 58) speaks of him as "Romae insignis causidicus," but in this he is probably only improving on the expression of Lactantius (*Inst. div.* v. 1) who speaks of him as "non ignobilis inter causidicos loci." He is now exclusively known by his *Octavius*, a dialogue on Christianity between the pagan Caecilius Natalis[1] and the Christian Octavius Januarius, a provincial lawyer, the friend and fellow-student of the author. The scene is pleasantly and graphically laid on the beach at Ostia on a holiday afternoon, and the discussion is represented as arising out of the homage paid by Caecilius, in passing, to the image of Serapis. His arguments for paganism (possibly modelled on those of Celsus) are taken up seriatim by Octavius, with the result that the assailant is convinced. Minucius himself plays the part of umpire. The form of the dialogue is modelled on the *De natura deorum* and *De divinatione* of Cicero and its style is both vigorous and elegant if at times not exempt from something of the affectation of the age. Its latinity is not of the specifically Christian type. If the doctrines of the Divine unity, the resurrection, and future rewards and punishments be left out of account, the work has less the character of an exposition of Christianity than of a philosophical and ethical polemic against the absurdities of polytheism. While it thus has much in common with the Greek Apologies it is full of the strong common sense that marks the Latin mind. Its ultimate appeal is to the fruits of faith.

The *Octavius* is admittedly earlier than Cyprian's *Quod idola dii non sint*, which borrows from it; how much earlier can be determined only by settling the relation in which it stands to Tertullian's *Apologeticum*. Since A. Ebert's exhaustive argument in 1868, repeated in 1889, the priority of Minucius has been generally admitted; the objections are stated in the *Dict. Chr. Biog.* article by G. Salmon. Editions: F. Sabaeus-Brixianus, as Bk. viii. of Arnobius (Rome, 1543); F. Balduinus, first separate edition (Heidelberg, 1560); Migne, *Patrol. Lat.* iii. 239; Halm in *Corp. Scr. Eccl. Lat.* (Vienna, 1867); H. A. Holden. Translations: R. E. Wallis, in *Ante-Nic. Fathers*, vol. iv.; A. A. Brodribb's *Pagan and Puritan*. Literature: In addition to that already cited see H. Boenig's art. in Hauck-Herzog's *Realencyk.* vol. 13, and the various histories of early Christian Literature by A. Harnack, G. Krüger, A. Ehrhard and O. Bardenhewer.

MINUET (adapted, under the influence of the Italian *minuetto*, from Fr. *menuet*, small, pretty, delicate, a diminutive of *menu*, from Lat. *minutus*; the word refers probably to the short steps, *pas menus*, taken in the dance), a dance for two persons, in ¾ time. At the period when it was most fashionable it was slow, ceremonious, and graceful (see DANCE). The name is also given to a musical composition written in the same time and rhythm, but when not accompanying an actual dance the pace was quicker. An example of the true form of the minuet is to be found in Don Giovanni. The minuet is frequently found as one of the movements in the Suites of Handel and Bach. Haydn introduced it into the symphony, with little trace of the slow grace and ceremony of the dance. In the hands of Beethoven it becomes the scherzo.

MINUSINSK, a town of Russia, in East Siberia, and the government of Yeniseisk, 180 m. S.S.W. of Krasnoyarsk railway station, and 5 m. from the right bank of the Yenisei, in a fertile prairie region. Pop. (1897), 10,255. It is a centre for trade with the native populations of the Sayan Mountains and north-western Mongolia. It has an excellent natural history, ethnographical and archaeological museum (1877), with a library and a meteorological station. Coal and iron abound in the vicinity.

[1] This name occurs in six inscriptions of the years 211–217 found at Constantine (Cirta), North Africa (*C.I.L.* vol. viii.). Like the other North African fathers Tertullian, Cyprian, Arnobius and Lactantius, he was a lawyer. Some use may have been made of rhetorical expressions of M. Cornelius Fronto of Cirta (d. *c.* A.D. 170).

the Arabs in the 8th century again brought desolation on the land, which was aggravated by continual misgovernment till the conquest of Algeria by the French in 1833.

The chief towns of Numidia under the Romans were: in the north, Cirta, the capital, which still retains the name Constantine given it by Constantine; Rusicada on the coast, serving as its port, on the site now occupied by Philippeville; and east of it Hippo Regius, well known as the see of St Augustine, near the modern Bona. To the south in the interior were Theveste (Tebessa) and Lambaesis (Lambessa) with extensive and striking Roman remains, connected by military roads with Cirta and Hippo respectively. Lambaesis was the seat of the legion III. Augusta, and the most important strategic centre, as commanding the passes of the Mons Aurasius, a mountain block which separated Numidia from the Gaetulian tribes of the desert, and which was gradually occupied in its whole extent by the Romans under the Empire. Including these towns there were altogether twenty which are known to have received at one time or another the title and status of Roman colonies; and in the 5th century the Notitia enumerates no less than 123 sees whose bishops assembled at Carthage in 479.

For bibliography and account of Roman remains, see under AFRICA, ROMAN.

NUMISMATICS (Lat. *numisma*, *nomisma*, a coin; from the Greek, derived from *νομίζειν*, to use according to law), the science treating of coins (Low Lat. *cuneus*, a die) and medals (Low Lat. *medalla*, a small coin).

The earliest known coins were issued by the Greeks in the 7th century before the Christian era. By the 4th century the whole civilized world used money (*q.v.*), each state generally having its proper coinage. This has continued to be the case to the present time; so that now there are few nations without a metal currency of their own, and of these but a small proportion are wholly unacquainted with the use of coins.

Coins, although they confirm history, rarely correct it, and never very greatly. The earliest belong to a time and to nations as to which we are not otherwise wholly ignorant, and they do not afford us that precise information which would fill in any important details of the meagre sketch of contemporary history. We gain from them scarcely any direct historical information, except that certain cities or princes issued money. When in later times the devices and inscriptions of the coins give more detailed information, history is far fuller and clearer, so that the numismatic evidence is rarely more than corroborative. There are, indeed, some remarkable exceptions to this rule, as in the case of the Bactrian and Indian coins, which have supplied the outlines of a portion of history which was otherwise almost wholly lost. The value of the corroborative evidence afforded by coins must not, however, be overlooked. It chiefly relates to chronology, although it also adds to our knowledge of the pedigrees of royal houses. But perhaps the most interesting manner in which coins and medals illustrate history is in their bearing contemporary, or nearly contemporary, portraits of the most famous kings and captains, from the time of the first successors of Alexander the Great to the present age, whereas pictures do not afford portraits in any number before the latter part of the middle ages; and works of sculpture, although occupying in this respect the same place as coins in the last-mentioned period and under the Roman empire, are neither so numerous nor so authentic. There is no more delightful companion in historical reading than a cabinet of coins and medals. The strength and energy of Alexander, the ferocity of Mithradates, the philosophic calmness of Antoninus, the obstinate ferocity of Nero, and the brutality of Caracalla are as plain on the coins as in the pages of history. The numismatic portraits of the time following the founding of Constantinople have less individuality; but after the revival of art they recover that quality, and maintain it to our own day, although executed in very different styles from those of antiquity. From this last class we can form a series of portraits more complete and not less interesting than that of the ancient period.

While coins and medals thus illustrate the events of history, they have an equally direct bearing on the belief of the nations by which they were issued; and in this reference lies no small part of their value in connexion with history. The mythology of the Greeks, not having been fixed in sacred writings, nor regulated by a dominant priesthood, but having grown out of the different beliefs of various tribes and isolated settlements, and having been allowed to form itself comparatively without check, can scarcely be learned from ancient books. Their writers give us but a partial or special view of it, and modern authors, in their attempts to systematize, have often but increased the confusion. The Greek coins, whether of kings or cities, until the death of Alexander, do not, with a few negligible exceptions, represent the human form. Afterwards, on the regal coins, the king's head usually occupies the obverse and a subject, usually sacred, is placed on the reverse. The coins of Greek cities under the empire have usually an imperial portrait and a reverse type usually mythological. The whole class thus affords us invaluable evidence for the reconstruction of Greek mythology. We have nowhere else so complete a series of the different types under which the divinities were represented. There are in modern galleries very few statues of Greek divinities, including such as were intended for architectural decoration, which are in good style, fairly preserved, and untouched by modern restorers. If to these we add reliefs of the same class, and the best Graeco-Roman copies, we can scarcely form a complete series of the various representations of these divinities. The coins, however, supply us with the series we desire, and we may select types which are not merely of good work, but of the finest. The mythology of ancient Italy, as distinct from that of the Greek colonies of Italy, is not so fully illustrated by the coins of the country, because these are for the most part of Greek design. There are, however, some remarkable exceptions, especially in the money of the Roman commonwealth, the greater number of the types of which are of a local character, including many that refer to the myths and traditions of the earliest days of the city. The coins of the empire are especially important, as bearing representations of those personifications of an allegorical character to which the influence of philosophy gave great prominence in Roman mythology.

Mythology.

Coins are scarcely less valuable in relation to geography than to history. The position of towns on the sea or on rivers, the race of their inhabitants, and many similar particulars are positively fixed on numismatic evidence. The information that coins convey as to the details of the history of towns and countries has a necessary connexion with geography, as has also their illustration of local forms of worship. The representations of natural productions on ancient money are of special importance, and afford assistance to the lexicographer. This is particularly the case with the Greek coins, on which these objects are frequently portrayed with great fidelity. We must recollect, however, that the nomenclature of the ancients was vague, and frequently comprised very different objects under one appellation, and that therefore we may find very different representations corresponding to the same name.

Geography.

The art of sculpture, of which coin-engraving is the offspring, receives the greatest illustration from numismatics. Not only is the memory of lost statues preserved to us in the designs of ancient coins, but those of Greece afford admirable examples of that skill by which her sculptors attained their great renown. The excellence of the designs of very many Greek coins struck during the period of the best art is indeed so great that, were it not for their smallness, they would form the finest series of art-studies in the world. The Roman coins, though at no time to be compared to the purest Greek, yet represent not unworthily the Graeco-Roman art of the empire. From the accession of Augustus to the death of Commodus they are often fully equal to the best Graeco-Roman statues. This may be said, for instance, of the dupondii struck in honour of Livia by Tiberius and by the younger Drusus, of the sestertii of Agrippina, and of the Flavian emperors, and of the gold coins of Antoninus Pius and the two Faustinas, all which present portraits of remarkable beauty and excellence. The Italian medals of the Renaissance are scarcely less useful as records of the progress and characteristics of art, and, placed by the side of the Greek and Roman coins, complete the most remarkable comparative series of monuments illustrating the history of the great schools of art

Art.

that can be brought together. Ancient coins throw some light upon the architecture as well as upon the sculpture of the nations by which they were struck. Under the empire, the Roman coins issued at the city very frequently bear representations of important edifices. The Greek imperial coins struck in the provinces present similar types, representing the most famous temples and other structures of their cities, of the form of some of which we should otherwise have been wholly ignorant. The art of gem-engraving among the ancients is perhaps most nearly connected with their coinage. The subjects of coins and gems are so similar and so similarly treated that the authenticity of gems, that most difficult of archaeological questions, receives the greatest aid from the study of coins.

After what has been said it is not necessary to do more than mention how greatly the study of coins tends to illustrate the contemporary literature of the nations which issued them. Not only the historians, but the philosophers and the poets, are constantly illustrated by the money of their times. This was perceived at the revival of letters; and during the 17th and 18th centuries coins were very frequently engraved in the larger editions of the classics.

Literature.

The science of numismatics is of comparatively recent origin. The ancients do not seem to have formed collections, although they appear to have occasionally preserved individual specimens for their beauty. Petrarch has the credit of having been the first collector of any note; but it is probable that in his time ancient coins were already attracting no little notice. The importance of the study of all coins has since been by degrees more and more recognised, and at present no branch of the pursuit is left wholly unexplored.

Origin of the Science.

Besides its bearing upon the history, the religion, the manners, and the arts of the nations which have used money, the science of numismatics has a special modern use in relation to art. Displaying the various styles of art prevalent in different ages, coins supply us with abundant means for promoting the advancement of art among ourselves. If the study of many schools be at all times of advantage, it is especially so when there is little originality in the world. Its least value is to point out the want of artistic merit and historical commemoration in modern coins, and to suggest that modern medals should be executed after some study of the rules which controlled the great works of former times.

Practical Use.

Definitions.—The following are the most necessary numismatic definitions.

1. A *coin* is a piece of metal of a fixed weight, stamped by authority of government, and employed as a circulating medium.[1]

2. A *medal* is a piece, having no place in the currency, struck to commemorate some event or person. Medals are frequently comprised with coins in descriptions that apply to both equally; thus, in the subsequent definitions, by the term coins, coins and medals must generally be understood.

3. The coinage of a country is usually divided into the classes of gold, silver and bronze (copper), for which the abbreviations *N*, *R*, and *Æ* are employed in catalogues. In addition to these metals, and to the modifications of them created by the presence of varying amounts of alloy, certain other compounds were frequently used, notably electrum, billon, brass and potin.

4. *Electrum* (ἤλεκτρον, ἤλεκτρος, λευκὸς χρυσός), a compound metallic substance, consisting of gold with a considerable alloy of silver. Pliny makes the proportion to have been four parts of gold to one of silver.[2] The material of early coins of Asia Minor struck in the cities of the western coast is the ancient electrum. The amount of silver varies very considerably with time and place. Gold largely alloyed with silver, not struck by the ancient Greeks or their neighbours, should be termed *pale gold*, as in the case of some of the late Byzantine coins.

5. *Billon*, a term applied to the base metal of some Roman coins, and also to that of some medieval and modern coins. It contains about one-fifth silver to four-fifths copper. When the base silver coins are replaced by copper washed with silver the term billon becomes inappropriate.

6. *Brass*, a mixture of copper and zinc. It may be used as an equivalent to the orichalcum of the Romans, a fine kind of brass of which the sestertii and dupondii were struck, but it is commonly applied indiscriminately to the whole of their copper currency under the empire.

7. *Potin*, an alloy of copper and tin (therefore a variety of bronze) used for some late Gaulish coins.

8. Various other metallic substances have been used in coinage, including iron (in Peloponnesus) and an alloy of copper and nickel employed for some Bactrian coins. The so-called "glass coins" of the Arabs are merely coin-weights.

9. The *forms* of coins have greatly varied in different countries and at different periods. The usual form in both ancient and modern times has been circular, and generally of no great thickness.

10. Coins are usually measured by millimetres, or by inches and tenths, the greatest dimension being taken, or, when they are square or oval, the greatest dimension in two directions.

11. The *weight* of a coin is of great importance, both in determining its genuineness and in distinguishing its identity. Metric weights are used by most numismatists except in England, where troy weight is still in general use.

12. The *specific gravity* of a coin may be of use in determining the metals in its composition.

13. Whatever representations or characters are borne by a coin constitute its *type*. The subject of each side is also called a type, and, when there is not only a device but an inscription, the latter may be excluded from the term. This last is the general use. No distinct rule has been laid down as to what makes a difference of type, but it may be considered to be an essential difference, however slight.

14. A difference too small to constitute a new type makes a *variety*.

15. A coin is a *duplicate* of another when it agrees with it in all particulars but those of exact size and weight. Strictly speaking, ancient coins are rarely, if ever, duplicates, except when struck from the same pair of dies.

16. *Struck* coins are those on which the designs are produced by dies impressed on the blank piece (or *flan*) of metal by some form of hammering or pressure; they are distinguished from *cast* coins made by running metal into a mould.

17. Of the two sides of a coin, that is called the *obverse* which bears the more important device. In early Greek coins it is the convex side, or the side impressed by the lower die; in Greek and Roman imperial it is the side bearing the head; in medieval and modern that bearing the royal effigy, or the king's name, or the name of the city; and in Oriental that on which the inscription begins. The other side is called the *reverse*.

18. The *field* of a coin is the space unoccupied by the principal devices or inscriptions. Any detached independent device or character is said to be in the field, except when it occupies the exergue.

19. The *exergue* is that part of the reverse of a coin which is below the main device, and distinctly separated from it; it often bears a secondary inscription. Thus, the well-known inscription CONOB occupies the exergue of the late Roman and early Byzantine gold coins.

20. The *edge* of a coin is the surface of its thickness.

21. By the *inscription* or *inscriptions* of a coin all the letters it bears are intended; an inscription is either principal or secondary.

22. In describing coins the terms *right* and *left* mean the right and left of the spectator, not the heraldic and military right and left, or those of the coin.

23. A *bust* is the representation of the head and neck; it is commonly used of such as show at least the collar-bone, other busts being called heads. A *head* properly means the representation of a head alone, without any part of the neck, but it is also commonly used

[1] This definition excludes, on the one hand, paper currencies and their equivalents among barbarous nations, such as cowries, because they are neither of metal nor of fixed weight, although either stamped or sanctioned by authority, and, on the other hand, modes of keeping metal in weight, like the so-called Celtic "ring-money," because it is not stamped, although perhaps sanctioned by authority. The latter has attracted much attention, but it is by no means made out that the rings were made with the primary intention of serving as money. But it is a very common usage among savage or semi-savage races to wear all their wealth in the form of ornaments (as a woman may even now wear her dowry as ornaments in the form of coins) and to use the ornaments (or cut-off portions of them, "skillings") whenever occasion arises as a medium of exchange. These rings then were doubtless used in this manner, but they were no more money than were any other precious possessions which could be used in exchange. There is no good evidence for the use of the little Gaulish "wheels" as money. On these questions see Blanchet, *Monn. gaul.* pp. 24-29. On the border of the definition are such prehistoric "dumps" of metal as have been found at Enkomi in Cyprus and at Cnossus in Crete; one of these indeed seems to bear traces of a mark of some kind.

[2] *Hist. nat.* xxxiii. 23; cp. xxxvii. 11. Pliny distinguishes two kinds of "electron,"—amber, and this metallic substance. In Greek poetry the name seems to apply to both, but it is generally difficult to decide which is meant in any particular case. Sophocles, however, where he mentions τάπὸ Σάρδεων ἤλεκτρον, . . . καὶ τὸν Ἰνδικὸν χρυσόν (*Ant.* 1037–1039), can scarcely be doubted to refer to the metallic electrum.

when any part of the neck above the collar-bone is shown. The present article follows custom in the use of the terms *bust* and *head*. When the neck is clothed, the bust is said to be draped.

24. A bust or head is either facing, usually three-quarter face, or in profile, in which latter case it is described as *to right* or *to left*. Two busts may be placed in various relative positions, as jugate or confronted.

25. A bust wearing a laurel-wreath is said to be *laureate*.

26. A bust bound with a regal fillet (diadem) is called *diademed*.

27. A bust wearing a crown with rays is said to be *radiate*.

28. An object in the field of a coin which is neither a letter nor a monogram is usually called a *symbol*. This term is, however, only applicable when such an object is evidently the badge of a town or individual. The term *adjunct*, which is sometimes employed instead of symbol, is manifestly incorrect.

29. A *mint-mark* is a difference placed by the authorities of the mint upon all money struck by them, or upon each new die or separate issue.

30. A coin is said to be "over-struck" or "re-struck" when it has been struck on an older coin, of which the types are not altogether obliterated.

31. A *double-struck* coin is one in which the die or dies have shifted so as to cause a double impression.

32. A coin which presents two obverse types, or two reverse types, or of which the types of the obverse and reverse do not correspond, is called a *mule*; it is the result of mistake or caprice.

Arrangement of Coins.—No uniform system has as yet been applied to the arrangement of all coins. It is usual to separate them into the three great classes of ancient coins (comprising Greek and Roman), medieval and modern, and Oriental coins. The details of these classes have been differently treated, both generally and specially. The arrangement of the Greek series has been first geographical, under countries and towns, and then chronological, for a further division; that of the Roman series, chronological, without reference to geography; that of the medieval and modern, the same as the Greek; and that of the Oriental, like the Greek, but unsystematically—a treatment inadmissible except in the case of a single empire. Then, again, some numismatists have separated each denomination or each metal, or have separated the denominations of one metal and not of another. There has been no general and comprehensive system, constructed upon reasonable principles, and applicable to every branch of this complicated science. Without laying down a system of rules, or criticizing former modes of arrangement, we offer the following as a classification which is uniform without being servile.

1. *Greek Coins.*—All coins of Greeks, or barbarians who adopted Greek money, struck before the Roman rule or under it, but without imperial effigies. The countries and their provinces are placed in a geographical order from west to east, according to the system of Eckhel, with the cities in alphabetical order under the provinces, and the kings in chronological order. The civic coins usually precede the regal, as being the more important. The coins are further arranged chronologically, the civic commencing with the oldest and ending with those bearing the effigies of Roman emperors. The gold coins of each period take precedence of the silver and the silver of the copper. The larger denominations in each metal are placed before the smaller. Coins of the same denomination and period are arranged in the alphabetical order of the magistrates' names, or the letters, &c., that they bear.

2. *Roman Coins.*—All coins issued by the Roman commonwealth and empire, whether struck at Rome or in the provinces. The arrangement is chronological, or, where this is better, under geographical divisions.

3. *Medieval and Modern Coins of Europe.*—All coins issued by Christian European states, their branches and colonies, from the fall of the empire of the West to the present day. This class is arranged in a geographical and chronological order, as similar as possible to that of the Greek class, with the important exception of the Byzantine coins and the coins following Byzantine systems, which occupy the first place. The reason for this deviation is that the Byzantine money may be regarded not only as the principal source of medieval coinage but as the most complete and important medieval series, extending as it does without a break throughout the middle ages. The regal coins usually precede the civic ones, as being the more important. The medals of each nation should be arranged in two series: (1) medals of rulers, according to their dates; (2) medals of private persons, as far as possible according to the artists.

4. *Oriental Coins.*—All coins bearing inscriptions in Eastern languages, excepting those of the Jews, Phoenicians and Carthaginians, which are classed with the Greek coins from their close connexion with them. These coins should be arranged under the following divisions: Ancient Persian, Arab, Modern Persian, Indian, Chinese and coins of the Far East.

This method of arrangement will be found to be as uniform as it can be made, without being absolutely mechanical. It differs in some important particulars from most or all of those which have previously obtained; but these very differences are the result of the consideration of a complete collection, and have therefore an inductive origin. A general uniformity is no slight gain, and may well reconcile us to some partial defects.

I. Greek Coins

There are some matters relating to Greek coins in general which may be properly considered before they are described in geographical order. These are their general character, the chief denominations, with the different talents of which they were the divisions, their devices and inscriptions, their art, and the mode of striking.

The period during which Greek coins were issued was probably not much less than a thousand years, commencing about the beginning of the 7th century B.C. and generally ending at the death of Gallienus (A.D. 268). If classed with reference only to their form, fabric, and general appearance they are of three principal types—the archaic Greek, the ordinary Greek, and the Graeco-Roman. The coins of the first class are of silver, electrum and sometimes gold. They are thick lumps of an irregular round form, bearing on the obverse a device, with in some cases an accompanying inscription, and on the reverse a square or oblong incuse stamp (*quadratum incusum*), usually divided in a rude manner. The coins of the second class are of gold, electrum, silver and bronze. They are much thinner than those of the preceding class, and usually have a convex obverse and a slightly concave or flat reverse. The obverse ordinarily bears a head in bold relief. The coins of the third class are, with very few exceptions, of bronze. They are flat and broad, but thin, and generally have on the obverse the portrait of a Roman emperor. Many Greek cities, however, during the empire issued *quasi-autonomous* coins bearing the head of some deity or personification. Greek coins thus fall mainly into the classes of autonomous, quasi-autonomous and imperial. The coinage of Roman colonies in Greek as in other lands is usually distinguished by Latin inscriptions.

Monetary Systems.

Since Greek coinage originated in Asia Minor, the coins were adjusted to the weight-systems there in use, and these go back to a Babylonian origin. But it is possible that some of the standard of Greece proper had a native origin. The unit of weight in the East was the shekel (*siglos*). This was $\frac{1}{60}$ of the manah (*mina, mna*), and this $\frac{1}{60}$ of the talent (*talanton*). This scale the Greeks modified, in that, starting from the siglos as unit, they invented a money-mina of 50 sigli, with a money-talent of 60 minae or 3000 sigli. The siglos-units (and corresponding standards) chiefly employed in Asia Minor were the following (the relation between gold and silver at the time of the invention of these units seems to have been $13\frac{1}{3}:1$):—

Gold shekel, 8·40 grammes.

Phoenician silver shekel, 7·44 g. $=\frac{1}{15}$ of 111·72 g. of silver, which was equivalent to 8·4 g. of gold.

Babylonian or Persic silver shekel, 11·17 g. $=\frac{1}{10}$ of 111·72 g. of silver, which was equivalent to 8·4 g. of gold.

Thus one gold shekel was the equivalent of 15 Phoenician or 10 Babylonian silver shekels. Side by side with this system was another in which the weights were exactly double of those just given; a shekel of the heavier system might be regarded as a double shekel of the lighter. Various Babylonian weights are extant, dating from 2000 B.C. downwards, which prove the existence of minae of the two systems. The gold shekel standard was almost invariably used for gold coins, sometimes also for electrum. The Babylonian and Phoenician standards were also sometimes used for gold or electrum as well as silver. A weight more or less approaching that of the gold shekel or its multiples seems to have been usual all over the civilized world in Greek times; *e.g.* the Phocaean standard of 16·52 g. was but a modification of it. But for silver in Greece proper, from a very early period, the following standards prevailed: the Aeginetic (unit, didrachm or stater, of 12·6 g.) and the Euboic-Attic (stater of 8·72 g.), with its modification the Corinthian. The Euboic-Attic standard attained enormous importance owing to the spread of Athenian trade and the adoption of the weight by Alexander of Macedon. It was used for both gold and silver. The Corinthian standard differed only in its divisional system, the stater being divided into thirds instead of halves. From it were derived some of the standards in use among the Greeks of S. Italy. Other standards of more local importance were: the Campanian, used in a large part of S. Italy (didrachm originally of 7·41 g., afterwards reduced), and perhaps derived from

the Phoenician; the Rhodian (instituted about 400 B.C., tetradrachm about 15 g.); and the cistophoric (from about 200 B.C., with a tetradrachm of about 12·73 g.).

Denominations. The following table exhibits the weights in grammes of the principal denominations of the Greek systems:—

	Gold Shekel System.	Babylonian or Persic.	Phoenician.	Aeginetic.	Euboic-Attic.
Double shekel, distater or tetradrachm	16·80	22·40	14·92	25·20	17·44
Shekel, stater or didrachm	8·40	11·20	7·46	12·60	8·72
Hemistater or drachm	4·20	5·60	3·73	6·30	4·36
Third or tetrobol	2·80	3·73	2·49	4·48	2·92
Twelfth or obol	0·70	0·93	0·62	1·12	0·73

The term stater is usually applied to the didrachm, but also to the tetradrachm, and at Cyrene to the drachm.

The bronze standards have been less fully discussed. Some notice of them will be given under different geographical heads.

Types. In the types of Greek coins (using the term in its restricted sense) the first intention of the designers was to indicate the city or state by which the money was issued. The necessity for distinctive devices was most strongly felt in the earlier days of the art, when the obverse of a coin alone bore a design, and, if any inscription, only the first letter, or the first few letters, of the name of the people by whom it was issued. Whatever may have been the original significance of the type in itself, religious or otherwise, it was adopted for the coinage—at least in the earliest times—because it was the badge by which the issuing authority was recognized. It was only with the increased complexity of the denominations in later times, when new distinguishing types had to be found, that—as in the 4th century B.C.—the religious motive in the choice of types came deliberately into play.

Classes. Greek coins, if arranged according to their types, fall into three classes: (1) civic coins, and regal without portraits of sovereigns; (2) regal coins bearing portraits; and (3) Graeco-Roman coins, whether with imperial heads or not. The coins of the first class have either a device on the obverse and the *quadratum incusum* on the reverse, or two devices; and these last are again either independent of each other, though connected by being both local, or—and this is more common—that on the reverse is a kind of complement of that on the obverse. It will be best first to describe the character of the principal kinds of types of the first class, and then to notice their relation. It must be noted that a head or bust is usually an obverse type, and a figure or group a reverse one, and that, when there is a head on both obverse and reverse, that on the former is usually larger than the other, and represents the personage locally considered to be the more important of the two. We must constantly bear in mind that these types are local if we would understand their meaning.

Types of Civic, &c., Coins. In the following list the types of Greek coins of cities, and of kings, not having regal portraits, are classed in a systematic order, without reference to their relative antiquity.

1. Head or figure of a divinity worshipped at the town, or by the people, which issued the coin, as the head of Athena on coins of Athens, and the figure of Heracles on coins of Boeotian Thebes. Groups are rare until the period of Graeco-Roman coinage.

2. Natural or artificial objects—(*a*) animal, often sacred to a divinity of the place, as the owl (Athens) and perhaps the tortoise (Aegina); (*b*) tree or plant, as the silphium (Cyrene) and the olive-branch (Athens); (*c*) arms or implements of divinities, as the arms of Heracles (Erythrae), the tongs of Vulcan (Aesernia). It is difficult to connect many objects comprised in this class with local divinities. Some of them, as the tunny at Cyzicus, are doubtless only so connected because the chief industry of a place was placed under the tutelage of its chief divinity.

3. Head or figure of a local genius—(*a*) river-god, as the Gelas (Gela); (*b*) nymph of a lake, as Camarina (Camarina); (*c*) nymph of a fountain, as Arethusa (Syracuse).

4. Head or figure of a fabulous personage or half-human monster, as a Gorgon (Neapolis Macedoniae), the Minotaur (Cnossus).

5. Fabulous animal, as Pegasus (Corinth), a griffin (Panticapaeum), the Chimaera (Sicyon).

6. Head or figure of a hero or founder, as Ulysses (Ithaca), the Lesser Ajax (Locri Opuntii), Taras, founder of Tarentum (Tarentum).

7. Objects connected with heroes—animal connected with local hero, as the Calydonian boar or his jaw-bone (Aetolians).

8. Celebrated real or traditional sacred localities, as mountains on which divinities are seated, the labyrinth (Cnossus).

9. Representations connected with the public religious festivals and contests, as a chariot victorious at the Olympic games (Syracuse).

The relation of the types of the obverse and reverse of a coin is a matter requiring careful consideration, since they frequently illustrate one another. As we have before observed, this relation is either that of two independent objects, which are connected only by their reference to the same place, or the one is a kind of complement of the other. Among coins illustrating the former class we may instance the beautiful silver didrachms of Camarina, having on the obverse the head of the river-god Hipparis and on the reverse the nymph of the lake carried over its waters by a swan, and those of Sicyon, having on the obverse the Chimaera and on the reverse a dove. The latter class is capable of being separated into several divisions. When the head of a divinity occurs on the obverse of a coin, the reverse is occupied by an object or objects sacred to that divinity. Thus the common Athenian tetradrachms have on the one side the head of Athene and on the other an owl and an olive-branch; the tetradrachms of the Chalcidians in Macedonia have the head of Apollo and the lyre; and the copper coins of Erythrae have the head of Heracles and his weapons. The same is the case with subjects relating to the heroes: thus there are drachms of the Aetolian League which have on the obverse the head of Atalanta and on the reverse the Calydonian boar, or his jaw-bone and the spear-head with which he was killed. In the same manner the coins of Cnossus, with the Minotaur on the obverse, have on the reverse a plan of the Labyrinth. Besides the two principal devices there are often others of less importance, which, although always sacred, and sometimes symbols of local divinities, are generally indicative of the position of the town, or have some reference to the families of magistrates who used them as badges. Thus, for example, besides such representations as the olive-branch sacred to Athene on the Athenian tetradrachms, as a kind of second device dolphins are frequently seen on coins of maritime places; and almost every series exhibits many symbols which can only be the badges of the magistrates with whose names they occur. Regal coins of this class, except Alexander's, usually bear types of a local character, owing to the small extent of most of the kingdoms, which were rather the territories of a city than considerable states at the period when these coins were issued.

Regal, with Portraits. The second great class—that of coins of kings bearing portraits—is necessarily separate from the first. Religious feeling affords the clue to the long exclusion of regal portraits—the feeling that it would be profane for a mortal to take a place always assigned hitherto to the immortals. Were there any doubt of this, it would be removed by the character of the earliest Greek regal portrait, that of Alexander, which occurs on coins of Lysimachus. This is not the representation of a living personage, but of one who was not only dead but had received a kind of apotheosis, and who, having been already called the son of Zeus Ammon while living, had been treated as a divinity after his death. He is therefore portrayed as a young Zeus Ammon. Probably, however, Alexander would not have been able, even when dead, thus to usurp the place of a divinity upon the coins, had not the Greeks become accustomed to the Oriental "worship" of the sovereign, which he did not discourage. This innovation rapidly produced a complete change; every king of the houses which were raised on the ruins of the Greek empire could place his portrait on the

money which he issued, and few neglected to do so, while the sovereigns of Egypt and Syria even assumed divine titles.

The reign of Alexander produced another great change in Greek coinage, very different from that we have noticed. He suppressed the local types almost throughout his empire, and compelled the towns to issue his own money, with some slight difference for mutual distinction. His successors followed the same policy; and thus the coins of this period have a new character. The obverses of regal coins with portraits have the head of the sovereign, which in some few instances gives place to that of his own or his country's tutelary divinity, while figures of the latter sort almost exclusively occupy the reverses. Small symbols, letters, and monograms on the reverses distinguish the towns in this class.

The Graeco-Roman coins begin, at different periods, with the seizure by Rome of the territories of the Greek states. They are almost all bronze; and those in that metal are the most characteristic and important. In their types we see a further departure from the religious intention of those of earlier times in the rare admission of representations, not only of eminent persons who had received some kind of apotheosis, such as great poets, but also of others who, although famous, were not, and in some cases probably could not have been, so honoured. We also observe on these coins many types of an allegorical character.

Graeco-Roman.

The following principal kinds of types may be specified, in addition to those of the two previous classes. (1) Head or figure of a famous personage who either had received a kind of apotheosis, as Homer (Smyrna), or had not been so honoured, as Herodotus (Halicarnassus) and Lais (Corinth). (2) Pictorial representations, always of a sacred character, although occasionally bordering on caricature. We may instance, as of the latter sort, a very remarkable type representing Athene playing on the double pipe and seeing her distorted face reflected in the water, while Marsyas gazes at her from a rock—a subject illustrating the myth of the invention of that instrument (Apamea Phrygiae). (3) Allegorical types, as Hope, &c., on the coins of Alexandria of Egypt, and many other towns. These were of Greek origin, and owed their popularity to the sculpture executed by Greeks under the empire; but the feeling which rendered such subjects prominent was not that of true Greek art, and they are essentially characteristic of the New Attic school which attained its height at Rome under the early emperors.

There is a class of coins which is always considered as part of the Graeco-Roman, although in some respects distinct. This is the colonial series, struck in Roman coloniae, and having almost always Latin inscriptions. As, however, these coloniae were towns in all parts of the empire, from Emerita in Spain (Merida) to Bostra in Arabia, in the midst of a Greek population and often of Greek origin, their coins help to complete the series of civic money, and, as we might expect, do not very markedly differ from the proper Greek imperial coins except in having Latin inscriptions and showing a preference for Roman types.

We have now to speak of the meaning of the inscriptions of Greek coins. These are either principal or secondary; but the former are always intended when inscriptions are mentioned without qualification, since the secondary ones are non-essential. The inscription of civic money is almost always the name of the people by which it was issued, in the genitive plural, as **ΑΘΗΝΑΙΩΝ** on coins of the Athenians, **ΣΥΡΑΚΟΣΙΩΝ** on coins of the Syracusans, or the name of the city in the genitive singular, as **ΑΚΡΑΓΑΝΤΟΣ** at Agrigentum. The inscription of regal money is the name, or name and title, of the sovereign in the genitive, as **ΑΛΕΞΑΝΔΡΟΥ**, or **ΒΑΣΙΛΕΩΣ ΑΛΕΞΑΝΔΡΟΥ**, on coins of Alexander the Great. Instead of this genitive an adjective is sometimes found, as *Ἀρκαδικόν* on early Arcadian coins, *Ἀλεξάνδρειος* on staters of Alexander of Pherae. This genitive or adjectival form implies a nominative understood, which has been generally supposed to be *νόμισμα* "money," or the name of some denomination.

Inscriptions.

There are a few instances in which a nominative of this kind is expressed on coins—**ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ**, "I am the badge of Phaeno (?) or Phanes" on an archaic Ionian coin; **ΓΟΡΤΥΝΟΣ ΤΟ ΠΑΙΜΑ**, "the striking, struck piece, or type of Gortys"; **ΦΑΙΣΤΙΟΝ ΤΟ ΠΑΙΜΑ ΣΕΥΘΑ ΑΡΓΥΡΙΟΝ** (silver money), or **ΚΟΜΜΑ** ("striking" or "struck piece"); and **ΚΟΤΥΟΣ ΧΑΡΑΚΤΗΡ** ("engraving" or "engraved piece"). Seuthes (end of 5th century B.C.) and Cotys (1st century B.C.), semi-barbarian Thracians, afford no evidence for Greek usage. The other instances (all archaic) point to the nominative understood in *early* times being in reality some word meaning type, or badge. But, if so, this latent nominative was eventually superseded by one meaning "money" or "coin." Thus the staters of Alexander of Pherae are inscribed *Ἀλεξάνδρειος*, his drachms *Ἀλεξανδρεία*. Probably from the 4th century onwards "coin" was always understood. Occasionally the name of the issuing authority is found in the nominative, as *Κύμε* (at Cumae), *Δάνκλε* (Zancle-Messana), *Ἀθε, ὁ δεμος* on a late coin probably issued by the Athenians in Delos, *Τάρας* at Tarentum. These are by no means always descriptive of the type, but merely a straightforward way of naming the issuing authority. The simple inscriptions of the early period of Greek coinage are under the kings and the Roman empire replaced by elaborate legends, most of which, however, fall under the description above given. A certain number of inscriptions directly describe the type (not merely giving the name of its owner) as *Σωσίπολις* (the goddess of Gela) or *Νίκα* (at Terina). Others, especially in Roman times, indicate the reason of issue, as *Ἰουδαίας ἑαλωκυίας* on coins of Judaea under Vespasian, or names of festivals for which the coins were issued. These, however, properly belong to the class of secondary inscriptions which either describe secondary types, as **ΑΘΛΑ**, "rewards," accompanying the representation of the arms given to the victor in the exergues of Syracusan decadrachms,[1] or are the names of magistrates or other officers, or in regal coins those of cities, or are those of the engravers of the dies, of whom sometimes two were employed, one for the obverse and the other for the reverse, or are dates. These inscriptions are often but abbreviations or monograms, especially when they indicate cities on the regal coins.

The importance of Greek coins as illustrating the character of contemporary art cannot be easily overrated. They are beyond all other monuments the grammar of Greek art. Their geographical and historical range is only limited by Greek history and the Greek world; as a series they may be called complete; in quality they are usually worthy of a place beside contemporary sculpture, having indeed a more uniform merit; they are sometimes the work of great artists, and there is no question of their authenticity, nor have they suffered from the injurious hand of the restorer. Thus they tell us what other monuments leave untold, filling up gaps in the sequence of works of art, and revealing local schools known from them alone.

Art of Coins.

The art of coins belongs to the province of relief, which lies between the domains of sculpture and of painting, partaking of the character of both, but most influenced by that which was dominant in each age. Thus in antiquity relief mainly shows the rule of sculpture; in the Renaissance that of painting.

It may be expected that Greek coins will bear the impress of the sister art of sculpture, filling up the gaps in the sequence of examples of the art of which we have remains, telling us somewhat of that which has but a written tradition. Our first duty is to endeavour to place the documents in the best order, separating the geographical from the historical indications, first examining the evidence of local schools, then those of the succession of styles. It is from coins alone that we can discover the existence of great local schools, reflecting the character of the different branches of the Hellenic race. In tracing the changes in these schools we gain a great addition to our ideas of the successive styles, and can detect new examples of those which owe their fame to the leading masters. But in dealing with works in relief we have the advantage due to their intermediate character. In our larger geographical horizon we can trace the character of the successive styles, not of sculpture only, but also of sculpture and painting.

Greek coins clearly indicate three great schools, each with its subordinate groups. The school of central Greece holds the first place, including the northern group centred in Thrace and Macedonia, and the southern in the Peloponnesus, with the outlying special schools of Crete and Cyrene. The Ionian school has its northern group, Ionia, Mysia and Aeolis, and its southern, Rhodes and Caria. Beyond these are certain barbarous and semi-barbarous groups, of which the most important is that of eastern Asia Minor, Persia and Phoenicia, with Cyprus. The school of the West comprises the two groups of Italy and Sicily.

Local Schools.

The whole duration of the schools is limited, by the repulse of the Persians and the accession of Alexander, from 480 to 332 B.C. Before this age all is archaic, and it is hard to trace local characteristics. After it, the centralizing policy of the sovereigns and the fall of the free cities destroyed local art. In certain cultivated centres under enlightened kings a local art arose, but it speedily became general, and we have thus to think of a succession of styles

[1] The arms on the Syracusan decadrachms represent a reward given to the victors in the Assinarian games (see below).

during the rest of the life of Greek art. The century and a half of the local schools is significantly the great age of this art.

In the study of each school we have first to determine its character, and then to look in its successive phases for the influence of the great masters of style. Two dangers must be avoided. We must not too sharply divide the sculptors and the painters as if they always were true to the special functions of their arts. It is well to bear in mind that the earliest great painter, Polygnotus, was a portrayer of character, *καλὸς ἠθογράφος, ἠθικός*, as Aristotle calls him, whereas the latest great sculptors represented expression (*τὰ πάθη*). Thus since *ἦθος* is the special province of sculpture, and *τὰ πάθη* of painting, sculpture first weighed down the balance, afterwards painting; but it must be remembered that relief can be truer to painting than sculpture in the round, which is more limited by the conditions of the material and mechanical necessities. Our second danger is due to the ease with which local qualities may be ascribed to the influence of a leading style. It is also to be borne in mind that the movement of art in coins was during one period slower than in sculpture—hence an influence more general than particular. Pheidias and Myron do not make their mark so much as Polyclitus. In all cases the direct influence of great masters is to be looked for later than their age.

The school of central Greece in its southern group, comprehending Attica, is remarkable for its widespread extent. It has its colonies in Magna Graecia at Thurium, an Athenian foundation, probably at Terina, and in Macedonia at Amphipolis and Chalcidice under Athenian rule. It alone shows instances comparable to the works of Pheidias, though its most numerous fine works are of the age of Polyclitus and that of Praxiteles and Scopas. Its qualities may be seen by comparison of the same subjects as treated by the other schools and groups. The earliest works are marked more than any others by the qualities of high promise which characterized the Aeginetan marbles—the same dignified self-restraint and calm simplicity. Next we perceive a series strong in style, and showing that lofty dignity, that reposeful embodiment of character, which are the stamp of the works of Pheidias and his contemporaries. The subjects are more remarkable for fidelity, breadth and boldness than for delicacy of execution or elaboration of ornament. Every subject is ideal, even the portrayal of animal form. Thus the character shows us what divinity is intended and the ideality what is intended by the representation of beast or bird. From these works we pass to those which reflect the style of the time of Praxiteles and Scopas, when the influence of painting began to be felt, and art inclined towards feeling and descended to sentiment. Still, to the last, character rules these coins, and the chief difference we see is in the increased love of beauty for its own sake and the fondness for representing movement, not to the exclusion of repose, but by its side. In other respects there is little change except in the finer execution and more ornamental quality of the work. Even when the greatest achievement of the Sicilian school, the female head on the decadrachms of Syracuse, is copied by the Locrians and the Messenians, the larger quality of the school of Greece asserts itself, and the copy is better than the original: there is less artifice and more breadth. The northern group is at first ruder, in the age of Pheidias severer, and afterwards it merges into the greater softness of its southern rival. If it copies, as Larissa may copy Syracuse and Neapolis in Campania, it again asserts its superior simplicity, and we prefer the copy to the original.

Central Greece.

The Ionian school lacks the sequence which the rest of the Greek world affords. It is broken by the baneful influence of the Persian dominion, and consequently the best works belong to the earliest and latest part of the period. The earliest coins, of the Aeginetan age, present nothing special; the later, of the time of Praxiteles and Scopas, comprise works not inferior to those of central Greece, and remarkable, like the Western and the Cretan, as the sole records of a school otherwise unknown. They are markedly characterized by the qualities of the style of feeling, that of Praxiteles and Scopas; but more than this, they are the expression of that style in pictorial form. They represent expression, and they treat it as it could not be treated in sculpture in the round, portraying locks streaming in the air and flowing draperies. It must be remembered that, while Hellas produced the great sculptors, western Asia Minor bred the great painters after Polygnotus, himself a sculptor in painting rather than a painter. In the native land of Zeuxis, Parrhasius and Apelles we see the evidence of the rule of painting. The technical skill is inferior to that of the West, yet the skill in modelling is far greater, and has no parallel in the medallic work of any other time or country.

Ionia.

The school of the West, if we except such outlying examples of the art of Hellas as those of Thurium and Terina, has its highest expression in Italy, its most characteristic in Sicily. It has distinctive qualities throughout the age. Even in the earlier period we trace a striving after beauty and a delicacy of finish, with a weakness of purpose, that mark the school with an influence increasing to a time long after the extinction of its rivals. At the same time there is a knowledge of the capacity of the materials and the form of the coin and a masterly power of finish, on the whole a completeness of technical skill which is unequalled. The result in the lower subjects is splendid, if wanting in variety, but in the higher we miss the noble achievements of the greater schools. So far there is a general agreement in the northern and southern groups. Yet the Italian shows a nobler and simpler style, with some affinity to that of central Greece, which we look for in vain in Sicily, though we are dazzled by the rich beauty of the magnificent series of coins which marks her wealthiest age. Sicilian art has this apparent advantage, that the great cities, save Syracuse, perished in the Carthaginian invasion, or under the tyranny of the elder Dionysius. Thus we have no important works save of Syracuse during the second half of our period, and cannot judge fully to what this school would have fallen. The key to this exceptional development of Greek art is found in the absence of sculptors or painters in the West, except only Pythagoras of Rhegium at the very beginning of the age, whose influence is thought to be traceable on the money of his native town. On the other hand, there can be no doubt that many of the Sicilian die-engravers, as Phrygillos (to mention one whose signature is actually found on an intaglio) were gem-engravers. The Western art is that of engravers accustomed to minute and decorative work, uninfluenced by sculpture or painting. Their designs will not bear enlargement, which only enhances the charm of those of the other leading schools. Those of the great Syracusan decadrachms are small; those of the minute hectae of Cyzicus are large.

The West.

The most important of the lesser schools is the Cretan. Crete, retaining the primitive life of older Hellas, was never truly civilized, but to the last enjoyed the privileges and exhibited the faults of an undeveloped condition. Producing in the age of high art neither sculptor nor painter of renown, the Cretans, to judge from their coins, were copyists of nature or art. At first rude, their work acquires excellence in design, but never in execution. While we see their poor reproductions of the designs of the Peloponnesus, we are amazed by their skill in portraying nature. Their gods are seated in trees with a background of foliage. Their bulls are sketched as they wandered in the meadows. All fitness for the mode of relief, as well as for the material and the shape of the coin, is entirely ignored. Hence a delight in foreshortening, and a free choice of subject with no reference to the circle in which it must be figured. In spite, however, of their skill, the Cretans never attempted the three-quarter face, which is at once the best suited to the surface of a coin and the most trying to the skill of the artist. Yet their work is delightfully fresh, as if done in the open air. There is no idealism, but much life and movement. In a word, the school is naturalistic and picturesque. Its works are of the highest value in the study of Greek art, but as examples of the application of that art to coins they are to be used with caution. Nowhere else do we see the artist so freely copying nature and art, nowhere so unshackled by academic rules, nowhere so little aware of the limitation of his province.

Crete.

It is important to study the mode in which Greek money was coined, because the forms of the pieces thus receive explanation, and true coins are discriminated from such modern falsifications as have been struck, and in some degree from those which have been cast. Our direct information on the subject is extremely scanty, but we are enabled by careful inference to obtain a very near approximation to the truth on all the most important points.

Mode of Coining.

Of the dies used by the Greeks exceedingly few have been preserved. In the museum at Sofia is an iron die for the reverse of a coin of Philip II. of Macedon; and several Gaulish dies exist. Most ancient dies are of bronze, others of hardened iron or steel. The blanks were, as a rule, first cast, sometimes in a spherical form, sometimes in a form more resembling that assumed by the finished coin. The blank was placed between two dies, the lower, let into an anvil, producing the obverse, the other, let into the end of a bar, producing the reverse. The bar was struck with a hammer, so that the blank received at the same time the impressions of both dies. This general rule was of course often modified; in some parts of the Greek world the dies were hinged together, in others not; and this arrangement of hinging the dies came in at different times in different places. The machinery of striking was probably much elaborated under the Roman empire, but a collar seems never to have been used in ancient times. Greek dies must usually have worn out very quickly; hence an enormous number of slightly varying representations of the same type. But the idea that it is uncommon to find two Greek coins from the same die is exaggerated. A great number of early Italian and Roman, and a few Greek coins, of large size, were cast in moulds, not struck; and under the empire many coins, originally struck, were reproduced, not always fraudulently, by casting; but the genuine ancient coin of small size is, as an almost invariable rule, struck and not cast.

We may now pass on to notice the Greek coinage of each country, following Eckhel's arrangement. The series begins with Spain, Gaul and Britain, constituting the only great class of barbarous Greek coinage. It must not be supposed that the money of the whole class is of one general character; on the contrary, it has very many divisions, distinguished by marked peculiarities; it has, however, everywhere one common characteristic—its devices are corrupt copies of those of Greek or Roman coins. The earliest of these barbarous coinages begin with the best imitations of the gold and silver money of Philip II. of Macedon. They probably first appeared to the north of his kingdom, but the gold soon spread as far as Gaul, and even found their way into southern Britain, by which time the original types had almost disappeared through successive degradations. Next in order of time are the silver imitations of Roman coins, the victoriati and denarii of the commonwealth, which began in Spain and passed into Gaul, being current with the gold money of Greek origin; even in Britain the later coinage shows much Roman influence. The copper money of Spain follows the imitated silver types; that of Gaul and Britain, though showing Roman influence, is more original.

Greek Coinage of the Far West.

Side by side with these large coinages we find Greek money of colonies in Gaul and Spain, and a far ampler issue of Phoenician coins by the Carthaginian kings and cities of the Peninsula. The coinage of Hispania, corresponding to the modern Spain and Portugal, was issued during a period of about four centuries, closing in A.D. 41. There are four classes of money, which in the order of their relative antiquity, are Greek, of two groups, Carthaginian, Romano-Iberian and Latin. The first or older group of Greek money (from before *c.* 350 B.C.) belongs to the widespread currency, which reveals the maritime power of the Ionians of Phocaea. It consists of fractions of the drachm of the Phocaean standard, from the diobol or third downwards. Its later pieces are of the Phocaean colony of Emporiae, founded by the earlier settlement of Massilia. Next in order and in part contemporary, beginning before the middle of the 3rd century B.C., come the drachms of Emporiae, which betray the influence of Siculo-Punic art. Their standard is probably Carthaginian. Of the neighbouring Rhoda, a Rhodian colony, there is similar money. Carthaginian coins of Spain begin in the same period with the issues of the great colony of Gades, following the same weights as the Emporian drachms. These are followed by the issues of the Barcides from 234 to 210 B.C., with Carthaginian types and of Phoenician weight, struck of six denominations, from the hexadrachm to the hemidrachm. Señor Zobel de Zangróniz has classed them to Spain, on the grounds of provenance and the possession of the silver mines by the Barcide kings, against Müller, who attributes them to Africa. The types are Carthaginian, and present some interesting subjects. The true Iberian currency begins not long after the Punic. The later drachms of Emporiae, ultimately following the weight of the contemporary Roman denarius, have Iberian legends, and form the centre of a group of imitations issued by neighbouring native tribes with their distinctive inscriptions. This coinage ceased when the Roman province was formed in 206 B.C. A little before this date the Romans had begun to introduce Latin money; about this time, however, they took the backward step of permitting native coinages of Latin weight. Probably they found that native legends and types were more welcome to their subjects than those of Rome. Consequently this coinage of Spain under the republic, which lasted until 133 B.C., may be almost considered national. The two provinces Hispania Citerior and Hispania Ulterior have this marked difference: the coins of the nearer province, of silver and bronze, have always Iberian inscriptions on the reverse, and are clearly under distinct Roman regulation; those of the farther are apparently of independent origin, and consequently bear Iberian, Phoenician, Libyo-Phoenician and Latin legends, but they are of bronze alone. The interest of these coins lies mainly in their historical and geographical information. They bear the names of tribes, often the same as those of the town of mintage. The art is poor, and lacks the quaint originality and decorative quality of that of Gaul. Ultimately the native money was wholly latinized (133 B.C.), silver was no longer issued, and although the Ulterior continued to have its own coinage, in the Citerior only Emporiae and Saguntum were allowed to strike coins. Political circumstances for a time renewed the coinage under Sertorius (80–72 B.C.) in the modified form of a bilingual currency. The purely Latin issues of the two provinces, and under the empire more largely (from 27 B.C.) of the three, Tarraconensis, Baetica and Lusitania, present little of interest. They closed in the reign of Caligula (A.D. 37–41), though in later times purely Roman money in gold and silver was issued at different times in Hispania down to the establishment of the Visigothic kingdom.

Spain.

The imperial money of Hispania introduces us to one of the two great classes of provincial coins under the empire; the larger of these was the Greek imperial, bearing Greek inscriptions, the smaller the Roman colonial, with Latin inscriptions, deriving its name from the circumstance that among Greek-speaking nations the coloniae were distinguished by the use of the Latin language on their money. In the coinage of Hispania, issued by a nation adopting Latin for official use, the aspect of the coinage is colonial, though it was not wholly issued by colonies. Many of the Spanish towns belong to the kindred class of municipia; others are neither coloniae nor municipia. In Hispania the obverse of the coin bears, as usual in the colonial class, the head of the emperor or of some imperial personage, the reverse a subject proper to the town. The priest guiding a plough drawn by an ox and a cow is peculiarly proper to a colonia, as portraying the ceremony of describing the walls of the city, so also an ox, with the same reference, the altar of the imperial founder, or, as connected with his cultus, a temple, probably in some cases that of Roma and Augustus. Other types, however, portray the old temples in restored Roman shapes, or indicate directly by fishes, ears of corn and more rarely bunches of grapes, the products of the country. Some original and grotesque types have a markedly local character. The money of Augusta Emerita (Merida) in Lusitania, a colony of pensioners (emiriti), is specially interesting, including as it does the silver issues of P. Carisius, the legatus of Augustus.

The coinage commonly called that of Gaul belongs to the people more properly than to the country, for it comprehends pieces issued by the Gauls or other barbarians from the borders of Macedonia and Illyricum to the English Channel and the Bay of Biscay, through Pannonia, part of Germany, Helvetia and Gaul. It influenced the money of northern Italy, and, crossing the Channel, produced that of

The Gauls.

Britain, which has its own distinctive features. Four classes of coinage are found in these vast limits. Arranging them by date, they are the money of the Greek colony of Massilia and her dependencies, that of the Gauls and other barbarians of central and western Europe, that which can be classed to the tribes and chiefs of Gaul and the imperial coinage of that country. The coins of the Gauls and other barbarians outside Gallia include the gold coins known as "rainbow cups" (*Regenbogenschüsselchen*), which seem to have been an original currency of the tribes inhabiting the Bohemian and Bavarian districts, and other gold and silver coins (the later series bearing names in Latin characters) which circulated in Noricum, Pannonia, Helvetia, Upper Germany, &c.

Massilia.

The great mart of Massilia (Marseilles), founded about 600 B.C. by the Phocaeans, was the centre of the Greek settlements of Gaul and northern Spain. Emporiae was her colony, with other nearer towns of inferior fame. Yet Massilia always held the first place, as is proved by the abundance of her money. At first it consisted of Phocaean obols, part of the widespread Western currency already noticed in speaking of Emporiae. These were succeeded by Attic drachms, some of which, about Philip of Macedon's time, are beautiful in style and execution. Their obverse type is the head of Artemis, crowned with olive, at once marking the sacred tree, which had grown from a branch carried by the colonists, so tradition said, with a statue of the goddess, from Ephesus, and proclaiming the value of the olive-groves of Massilia. On the reverse we note the Asiatic lion, common to it and the last colony of Phocaea, the Italian Velia in Lucania. These coins circulated extensively in southern Gaul, and were much imitated by the barbarians on both sides of the Alps.

Gaul.

The Gauls, on their predatory incursions into Greece, must have seized large quantities of the gold coinage circulating there, but it is probable that the gold staters of Philip (Pl. I. fig. 14), from which the chief types of the Gaulish gold are derived (Pl. I. fig. 1), had already found their way, independently of such raids, by means of trade along the Danube valley into the districts then inhabited by the Gauls. This is clear from the fact that the gold coins of Alexander were never, his silver rarely, imitated by the Gauls, yet these were in circulation at the time of the incursions. Nor did the influence of Philip's silver travel far west. But his gold money evidently travelled through central Europe to Gallia. The money of Gallia before the complete Roman conquest, to which it may be anterior in its commencement by half a century, belongs in the gold to degraded types of the earlier widespread currency. The undoubted gold and electrum of this imitative class, identified as bearing regal or geographical names, are extremely limited. By far the most interesting coin of the group is the gold piece which bears the name at full length of the brave and unfortunate Vercingetorix. The silver money is comparatively common. The Gauls were ready to copy any types that came in their way, so that in the coinage of Gaul we find imitations of the coinage of Tarentum, Campania, various Spanish cities such as Rhoda, and Roman coins of the republic and early empire. The effect of the silver of Massilia and other Greek colonies is especially noticeable in S. Gaul, and the Roman denarius naturally exerted a strong influence. The bronze money of Gaul is still more abundant than the silver, and has a special interest from its characteristic types. Some of the later local coins are casts of an alloy of copper and tin called *potin*, but merely a variety of bronze. The Roman coins recall those of Hispania, but are limited to a few coloniae. They range in date from Antony and Augustus to Claudius. The best-known coins of this time, those struck at the colony of Copia Lugdunum (Lyons) with the "Altar of Roma and Augustus," belong, however, strictly speaking, to the Roman series. The coins of Nemausus (Nîmes), commemorating the conquest of Egypt in the crocodile chained to a palm-tree, were sometimes made in the shape of the hind-leg of an animal, evidently for dedication in the sacred fountain, from the mud of which all the specimens of this variety are derived.

Britain.

The ancient coinage of Britain is the child of that of Gaul, retaining the marks of its parentage, yet with characters of its own due to independent growth. Money first came in trade by the easiest sea-passage, and, once established in Kent, gradually spread north and west, until the age of the earlier Roman wars, when it was issued in Yorkshire, probably in Lincolnshire, and in a territory of which the northern limits are marked by the counties of Norfolk, Cambridge, Huntingdon, Bedford, Buckingham, Oxford, Gloucester and Somerset. The oldest coins are gold imitations of Philip's staters, which, whether struck in Gaul or Britain, had a circulation on the British side of the Channel. They are the prototypes of all later money. From a careful comparison of their weights with those of later coins, and from a study of the gradual degradation of the types, Evans places the origin of the coinage between 200 and 150 B.C. Its close may be placed about the middle of the 1st century A.D. The inscribed coins occupy the last century of this period, being contemporary with uninscribed ones. The uninscribed coins are of gold, silver, bronze and tin, the gold being by far the most common. There is small variety in the types, nearly all in gold and silver, and some in copper, presenting in more or less degraded form the original Gaulish type for gold. It may be suspected that all new types and the extremely barbarous descendant of the tin series are of the age of the inscribed coins, or but little earlier. The Channel Islands are remarkable for a peculiar coinage of billon, a very base silver, presenting the usual types modified by Gaulish grotesqueness. The place of this group in the British series is merely accidental; in character as in geography it is Gaulish.

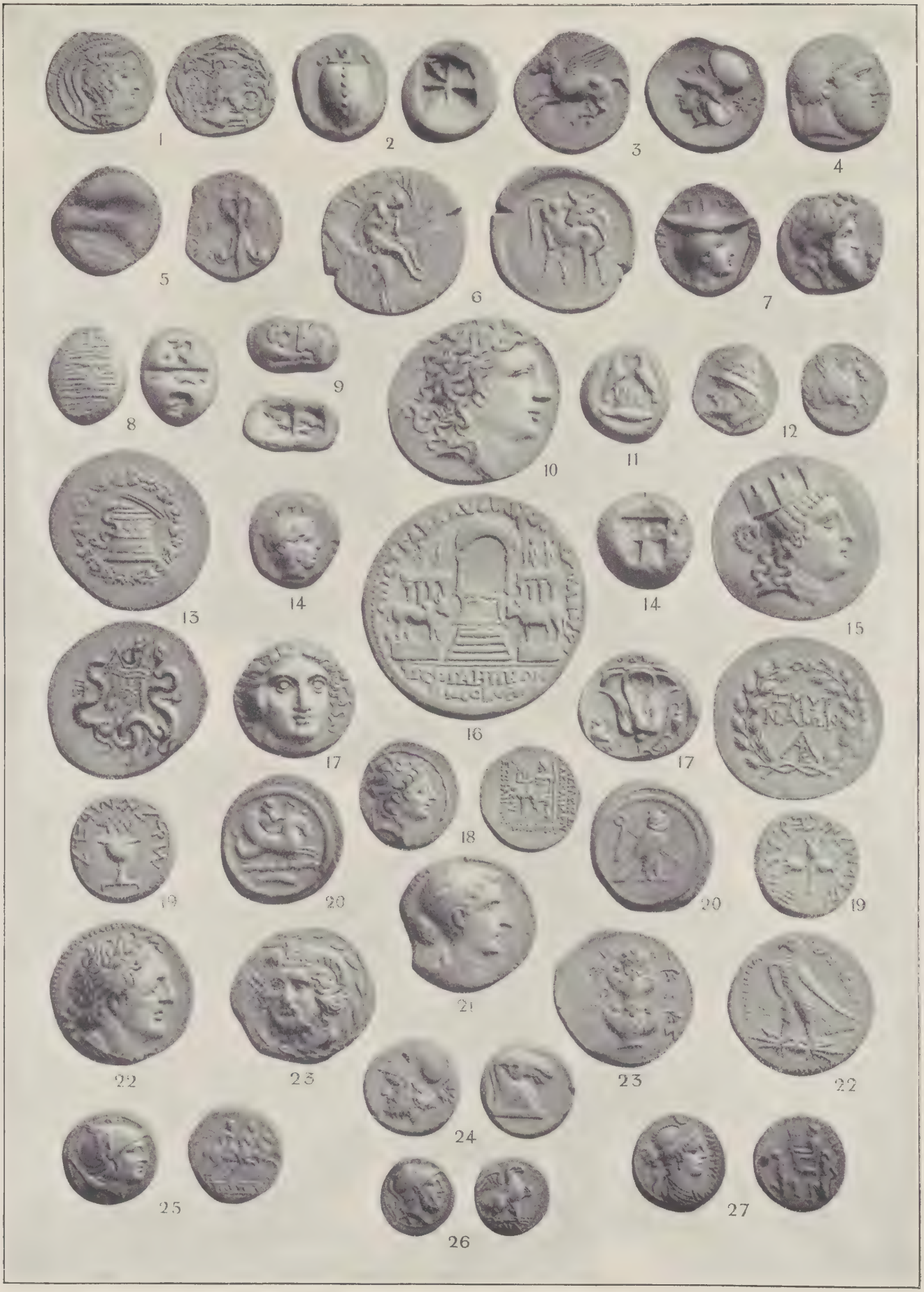
The inscribed coins are evidently in most cases of chiefs, though it is certain that one town (Verulamium) and some tribes had the right of striking money. The most interesting coins are those of known chiefs and their families—of Commius, probably the active prince mentioned by Caesar, of Dubnovellaunus, mentioned in the famous Ancyra inscription, which has been called the will of Augustus, and most of all the large and interesting series of Cunobelinus, Shakespeare's Cymbeline (Pl. I. fig. 2), his brother Epaticcus, and his father Tasciovanus. It is evident from the coins and historical evidence collected by Evans that Tasciovanus had a long reign. His chief town, as we learn from his money, was Verulamium. His coins are in three metals, repeat the traditional types, and present new ones, some showing a distinctly Roman influence. The money of Epaticcus is scanty, but that of Cunobelinus, with Camulodunum (Colchester) for his chief town, is even more abundant than his father's, indicating a second long reign, and having the same general characteristics. The gold shows a modification of the traditional type, the silver and bronze the free action of Roman influence and a remarkable progress in art. With the death of this prince not long before A.D. 43 the bulk of the British coinage probably ceases, none being known of his sons, Adminius, Togodumnus and the more famous Caractacus, but the coins of the Iceni may have continued as late as A.D. 50, and the Brigantes issued silver coins as late as the time of Cartimandua, whose name is partly preserved on one of them.

Italy.

The ancient coins of Italy occupy the next place. They appear to have been struck during a period of more than 500 years, the oldest being probably of the beginning of the 6th century B.C. and the latest somewhat anterior to the time of Julius Caesar. The larger number, however, are of the age before the great extension of Roman power, which soon led to the use of Roman money almost throughout Italy. There are two great classes, which may be called the proper Italian and the Graeco-Italian; but many coins present peculiarities of both. The proper Italian coins are of gold, silver and bronze. Of these, the gold coins are extremely rare, and can never have been struck in any large numbers. The silver are comparatively common, but the bronze are very numerous and characteristic. A few of the earliest gold and silver coins of Etruria have a perfectly plain reverse. The most remarkable bronze coins of this class are of the kind called *aes grave*, most of which were the early proper coinage of Rome, although others are known to have been

XIX. 876.

GREEK COINS.



GREEK AND ROMAN COINS.

issued by other Italian cities. These are very thick coins, some of which are of great size, while most have a rude appearance. They are always cast, and were preceded by formless lumps of bronze, known as *aes rude*, which were not properly a state-coinage. The designs of the Italian coins are generally, if not always, of Greek origin, although the influence of the native mythology may be sometimes traced. The inscriptions are in Latin, Oscan or Etruscan, and follow a native orthography; sometimes on the earlier coins they are retrograde. The art of this class is generally poor, or even barbarous. The denominations are common to Greek money, except in the case of the bronze, which follows a native system. Of this system the early proper Roman coins afford the best known examples. The Graeco-Italian coins are of gold, silver and bronze. The silver and bronze are very common, and the gold comparatively so, although struck by few states or cities. A number of the cities of S. Italy issued in the 6th century coins with an incuse design on the reverse repeating with slight modifications the design of the obverse. The designs are of Greek origin, although here, as in the proper Italian coins, but less markedly, native influence can be detected. This influence is evident in the frequent occurrence of types symbolically representing rivers, showing a bias towards the old nature-worship, and still more in the use of Latin inscriptions, with half-Italian forms of the letters on coins otherwise Greek. Of the best art of ancient Italian money we have already spoken, and we shall have occasion to mention some of its most beautiful examples. The denominations of the gold and silver coins are unquestionably derived from those of Greece, according to the weight of the Attic talent, the heaviest gold piece being the stater or 3000th part of that talent; in silver there are few tetradrachms, the didrachms are extremely common, and smaller denominations are usually not rare. We thus learn that the silver currency was chiefly of didrachms, smaller pieces being less used, and larger ones scarcely used at all. It is important here to notice that the interchange of the native or Italian bronze coinage with the Greek silver coinage led to a double standard, silver and bronze. The bronze standard, as might be suspected, was of Italian origin, the silver of foreign introduction.

The peculiarity of the Italian bronze is that in its oldest cast form it was of such weight as to show the absence in some parts of the country of silver equivalents. It was long after silver had been introduced everywhere, with struck bronze equivalents, before the heavy coinage (aes grave) went out of circulation. The silver money is at first remarkable for the evidence it affords of its extraneous character in presenting two standards. Afterwards it becomes equivalent to the bronze, or supplies equivalent pieces, and is quite regular. The original condition of the Italian currencies is best illustrated by the money of Etruria in the 4th and 3rd centuries B.C. Etruria, be it remembered, was an early goal of oriental commerce by sea. At the great mart of Populonia, and in the country round, we find, besides a few gold coins, not only silver coins of two different foreign standards, the Euboic and the so-called Persic, but also cast aes grave and later struck bronze pieces. Without discussing the origin of these various currencies it is enough to note that they bear witness to the effects of a widely-spread commerce, and show that here was the meeting-point of the native system and of foreign ones.

In Italy the aes grave long ruled. Originally it was libral, the principal coin being the as, nominally of the weight of the Italic pound of 273 grammes; this, at least, is the weight of the earliest Roman coinage. On the other hand, the aes grave of some places in E. Italy, as Hatria and Ariminum, is heavier. The successive reductions of the as belong to Roman numismatics, and it is only necessary here to add that they affected the local bronze coinages as Italy fell under the rule of the republic. The silver coinages, on the other hand, survived for a longer time throughout the Greek cities. Apart from the complicated silver coinage of Etruria, and from the Roman issues, we find in central Italy a few silver coins (the unit of 1·18 grammes being the equivalent, at the rate of 1·250, of a bronze as of 11-10 oz.) and a large silver coinage of didrachms and smaller denominations in lower Italy. This was chiefly issued by the wealthy marts which dotted the coasts of Campania, Calabria, Lucania and the Bruttii. We find Etruscan inscriptions on the coins of Etruria, and Oscan on some of those of middle and lower Italy, where they are eclipsed in number and style by the Greek issues. The chief silver standards of S. Italy are (1) the Campanian (with a didrachm of 7·41 grammes); (2) the Italic, with a stater of 8·16 grammes, divided into thirds; and (3) the Tarentine, with a stater of 8·32 grammes, divided into halves. The Tarentine stater was known as *νοῦμμος*. The independent coinage of Italy, with one exception, came to an end in 89 B.C.

Beginning in the north of Italy, the first coins that strike us are those of Populonia in Etruria. The silver money of this place is generally of the peculiar fabric in which the reverse is left perfectly plain. The aes grave of upper and middle Italy was largely dominated by the issues of the Roman mints at Rome and Capua (to be treated later). Samnium shows us a curious revival of native silver money after the local coinage of the Italian towns had been almost abolished by Rome. It was the result of the Social or Marsic War of the confederate tribes, who struck for Italy against the Roman supremacy during the years between 90 and 88 B.C. The coins present the head of Italia, and reverse types, of which the most striking are warriors, varying in number, taking an oath over a sacrificial pig, and a bull for Italy goring the prostrate wolf of Rome. The inscriptions are Oscan or Latin.

Greek towns of Italy.

Certain of the Greek towns of Italy deserve special mention for the splendour of their coinage—beautiful in style and delicate in execution. In Campania (leaving the Romano-Campanian for later notice) the two most interesting currencies are of Cumae and Neapolis, the modern Naples. Cumae presents silver money of the archaic and the early fine style, in which last we first observe the peculiar naïveté of western Greek art before it had attained elaboration. The abundant silver coins of Neapolis are of the early and the late fine periods and of the decline. The types are usually the head of the siren Parthenope, more rarely Athene; the reverse presents the man-headed bull common on Campanian money, and possibly meant for the river-god Acheloüs, father of the Sirens. The bronze money is of good style, and age has beautified it with the rich blue or green patina due to the sulphurous soil. When we reach Calabria the Greek money startles us in astonishing wealth of beauty in the currency of the opulent and luxurious mart of Tarentum, second only to Syracuse in the whole West, of all the main periods of art, and including in the age of its present prosperity and its fall (the time of the contest with Rome) the most abundant gold issues of any Greek city. The gold money of Tarentum (see Plate) is a delight to the eye, with the varied beauty of its gem-like types, which, while they show the gem-engraver's art, prove the medallist's knowledge of the rich but opaque metallic material. Several heads of divinities adorn these coins, and the chief reverse types relate to the legendary founder, Taras, son of Poseidon. Always a youth, he appears as a charioteer, perhaps as a horseman, and riding on a dolphin—the familiar Tarentine type. The most remarkable subject represents him with outstretched arms praying to Poseidon, probably in allusion to the Tarentines' appeal to Sparta for aid about 346 B.C. (Pl. I. fig. 3). The silver coinage is chiefly of didrachms of reduced Corinthian weight. The prevalent type is Taras seated on a dolphin; in the earliest money the type is single, and repeated incuse on the reverse; afterwards this subject occupies the reverse, and, itself a charming composition, is delightfully varied. On the early fine coins the people or demos, personified generally as a youth, often holding a spindle, occupies the obverse, but gives place in the 4th century to a horseman in various attitudes, affording great scope to the engraver's skill; probably he is Taras himself, save when he is a full-grown warrior. These representations illustrate the famed horsemanship of the Tarentines, and refer to contests and games which were probably local. Heraclea in Lucania shows us didrachms of the fine age, with heads of Athene and subjects connected with Heracles: the contest with the Nemean lion is most skilfully treated, and the series is very characteristic of the gem-engraver's art. The powerful city of Metapontum begins with early coins having the incuse reverse, and then displays a long series stretching down to the decline of art. The constant type, which recurs with the heraldic instinct of the West, is the ear of barley, reminding us of the "golden harvest" (*χρυσοῦν θέρος*) which the Metapontines dedicated at Delphi. Like the Tarentine badge, it first occupies the obverse, then the reverse, balanced by a charming series of heads of divinities. Persephone is the most appropriate counterpart; we also note heads of Concordia (*Ὁμόνοια*) and Hygieia, marked by an ingenuous grace peculiar to the early fine work of the Western school, of Leucippus the founder as a helmeted warrior (occurring on a rare tetradrachm and the usual didrachms), and many other types of unusual variety and originality of conception.

Poseidonia issued coins from the archaic period (beginning with the usual incuse fabric) to its capture by the Lucanians early in the 4th century. Its successor Paestum began to coin about 300, and was allowed to keep its mint open even after 89 B.C., when all other local mints in Italy were closed, until the time of Tiberius.

The ancient Sybaris, famous for her luxury, has left archaic coins; she was, however, destroyed by Croton in 510 B.C. The Athenian colony of Thurium eventually arose near the site of the old Sybaris in 443, and immediately began to issue a splendid series of coins. Not only is the face of the coin occupied by the head of Athene, and the great currency, as at Athens, of tetradrachms, but the severe beauty of the style points to the direct influence of the art of central Greece (Pl. I. fig. 4). The head of Athene is covered by a helmet adorned first with a wreath of olive and then a splendid figure of the sea-monster Scylla. The reverse shows a bull butting (*θούριος*), in a strikingly ideal form. Probably the obverse type affords the nearest reflection of the masterpiece of Pheidias, or at least the closest following of his style.

Velia, the last colony of Phocaea, whose citizens sailed away to the far west rather than submit to the Persian tyrant (544 B.C.), shows coins from its foundation. The pieces of fine work witness to an Asiatic origin in the types of the lion, devouring the stag or as a single device, while the obverse displays the head of Athene so much in favour in Magna Graecia. The style, which lacks strength but not beauty, is Italian, and we see no trace of the pictorial qualities of Ionian art, which indeed had not taken its mature form when the exiles left the mother country.

The Bruttii are the first native Italians whom we find striking a fair Greek coinage. Their gold and silver is of late style, the gold presenting the head of Poseidon and Thetis on a sea-horse, the silver the head of Thetis and the figure of Poseidon, both with other subjects. Caulonia has early coins running down to the early fine period, mythologically interesting in type, and the later with a beautifully designed stag on the reverse. For Croton the ruling type is the tripod. The eagle occurs on the obverse and the tripod on the reverse. The bird of Zeus is inferior to that at Agrigentum, as this again is inferior to the eagle of Elis. We note also beautiful types of Heracles seated, one of marvellously delicate work, on the reverse of which Apollo aims an arrow at the Python from behind his tripod—a remarkable composition. The other Heracles types form a most interesting series of recollections, "memory sketches," of a famous statue, the pose of which recalls the so-called Theseus of the Parthenon, while the obverse presents the head of the Hera Lacinia worshipped on the promontory close by. The latest coins, like the parallel ones of Metapontum, are weak and pretty. The money of the Locri Epizephyrii affords two curious types of reverse, Eirene seated, of fine style, with the legend **ΕΙΡΗΝΗ ΛΟΚΡΩΝ**, and the later yet more remarkable subject of Roma seated while Pistis crowns her, the legend being **ΡΩΜΑ ΠΙΣΤΙΣ ΛΟΚΡΩΝ**. There are beautiful coins of the little known town of Pandosia, bearing the head of the nymph Pandosia (?); the reverse has the river Crathis, a splendid head of the Lacinian Hera, and Pan.

Rhegium was closely connected with Messene in Sicily opposite, and thus the great Sicilian currency of tetradrachms prevails. Anaxilaus, tyrant of Rhegium from 494 to 476 B.C., early in his rule acquired Messene through Samian adventurers. The coins of both towns at first present Samian types, and then, the Samians having been expelled, Anaxilaus commemorates his Olympic victory in the mule-car. The same type appears at Messene and last longer. In both cases the reverse bears a running hare, an animal which Anaxilaus introduced into Sicily. The later 5th-century coinage of Rhegium shows a seated figure of the Rhegine Demos, and a fine head of Apollo, by the engraver Hippocrates.

The little-known town of Terina is illustrious as having produced a series of silver didrachms which, on the whole, is the most beautiful in Italy (Pl. I. fig. 5). The obverse has the head of a goddess, who is portrayed winged on the reverse—a wonderfully fine subject, well conceived and most delicately executed in a variety of different attitudes, some recalling the Victories which adorn the balustrade of the temple of Wingless Victory at Athens. Very curiously, the money of Terina begins with an archaic coin which bears on the reverse the named figure of a Wingless Victory, surrounded by the olive-wreath.

Sicily.

The coinage of Sicily is Greek. The Hellenic and Carthaginian colonies of the coast left the barbarous natives undisturbed in the inland country, and both issued Greek money, the Punic with a tincture of Phoenician style. The coinage ranges from the 6th century B.C. until the subjugation of the island by the Romans, after which a few cities struck colonial or imperial coins for a short space. The marked periods are those of the preponderance of Syracuse from 480 to 212 B.C., interrupted by the great Carthaginian wars, which were fatal to the cities of the southern coast. The coinage is in gold and electrum, mainly issued at Syracuse, in silver and in bronze. The standard is Attic, except the earliest money of the Chalcidian colonies Himera, Zancle (Messene), and Naxos, which follows the Aeginetan weight. The metrology of Sicily has a distinct relation to that of Italy. Here also there is a double standard, silver and bronze, and in consequence an intrusive silver coin, differing but little from the obol, weighing 0·87 instead of ·73 grammes, the silver equivalent of the bronze litra, whose name it borrows. The litra in bronze was the Sicilian pound of 218 grammes, equal to half an Attic mina, and to two-thirds of the Roman libra or pound. So important was the litra in Sicily that the silver litra supplanted the obol, and the didrachm was sometimes called a stater of ten litrae, the decadrachm a piece of fifty litrae, pentecontalitron. The leading coin is the tetradrachm, not, as in Italy, the didrachm.

The Sicilian money is of extremely careful artistic work, not unfrequently even in the case of bronze allowing for a more rapid execution of the die; and the highest technical excellence is attained. The art is that of the southern branch of the great Western school, generally more skilful than the art of southern Italy, but less varied. The earlier fine work has a naïve beauty peculiar to the West and almost confined to Sicily; all that follows is evidently gem-engravers' work. These coins are remarkable for the frequency of artists' signatures, which for the short period of highest skill are almost universal on the larger silver money of Syracuse, and occur less frequently on that of the other great cities. Among these artists may be mentioned Exacestidas (at Camarina), Eucleidas, Eumenes, Phrygillus (at Syracuse), Euaenetus (Syracuse, Camarina, Catana), Cimon (Messana, Syracuse Pl. I. figs. 7, 8), Heracleidas and Choirion (Catana). As in Italy, the decline is more rapid than elsewhere in the Greek world, in consequence of the inherent weakness of the style; but it is in part due to the calamities of the island, as of lower Italy.

The fame won by the tyranni and other leading aristocrats of Sicily in the great national contests of Hellas, in the race with the quadriga, the mule-car and the horse, led to the introduction and supremacy of types commemorating these victories, probably in most cases those achieved at Olympia. It is obvious that no success could be so appropriately figured on the coinage; the charioteer or the horseman, not the city, was the victor, but at the same time the renown of the city was indissolubly connected with the citizen who won it. Hence these types are almost confined to states ruled by tyranni or oligarchies; outside Sicily they are practically only found at Rhegium when it was closely connected with Sicily, at Cyrene, in the money of Philip II. of Macedon and at Olynthus and in Euboea. The horseman is not a frequent type; the mule-car is limited to Messene (and Rhegium); but the quadriga becomes the stereotyped subject for the reverse of the great Sicilian tetradrachms—the bulk of the coinage—and only escapes heraldic sameness by a charming variety in the details. In the age of finest art a divinity of the city takes, in Homeric guise, the place of the charioteer, or Victory herself so wins the contest; commonly she hovers above, about to crown the charioteer or the horses. Yet more interesting are the types connected with nature-worship, especially those portraying river-gods in the form of a man-headed bull, or a youth with the budding horns of a calf, or in the shape of a dog, and also the subjects of the nymphs of fountains. These types occur on either side of the coin. On nearly all, one side (in early times the reverse, later the obverse) is held by the head of a divinity, Persephone and Athene taking the first place.

Syracuse.

The leading position which Syracuse held in the island makes it proper to notice her splendid currency first, the finest for knowledge of the materials, for skill in suitably filling the space, and for delicacy of execution in the whole range of Greek money, though we miss the noble simplicity of Greece, the strong feeling of western Asia Minor, and the simple picturesqueness of Crete. Syracuse was founded in 734 B.C. by Archias of Corinth, an origin which, remembered on both sides, served her well in later history. In the 6th century, perhaps while still under the oligarchy of the Geomori, she issued her most archaic silver money, which, primitive as

it is, gives promise of the care of the later coinage, and begins the agonistic types, thus indicating some early victory at a great Hellenic contest. Gelo, tyrant of Gela, won the chariot race at Olympia in 488 B.C., secured Syracuse in 485 B.C., and, when the Carthaginians, probably by agreement with Xerxes, invaded Sicily, utterly routed them at the great battle of Himera (480 B.C.), the Salamis of the West. These events find their record in the issue and subjects of his Syracusan money, which, however, was struck, as usual in that age, in the name of the people. The chariot type is varied, for Victory appears hovering above the charioteer, about to crown the horses, and the coins issued after the great battle show the lion of Libya beneath the car in the exergue (Pl. I. fig. 6). These last pieces are fixed in date by the famous story how Gelo's wife Demarete, having gained favourable terms for the vanquished Carthaginians, was presented by them with a hundred talents of gold, by means of which were coined the great silver pieces of fifty litrae or ten drachms, which were called after her Demareteia. They bear the head of Victory, crowned with laurel, and the quadriga and lion. The battle of Himera and the death of Gelo (478 B.C.) fix the date of these remarkable coins, which close the archaic series of Syracuse and give us a fixed point in Greek art, at about 479 B.C.

Hiero I. (478–466 B.C.), the brother and successor of Gelo, continues the same types, alluding, as Head well remarks (*loc. cit.*), to his great victory over the Etruscans off Cumae (474 B.C.), by the marine monster in the exergue of the reverse which denotes the vanquished maritime power. It is to be noted that as Gelo introduces the Victory in the chariot type, so in the horseman type we now first see Victory crowning the rider. Gelo had won an Olympic victory in the four-horse contest, Hiero in the horse-race, though he also won with the four horses in the Pythian games. With Hiero's money we say farewell to archaic art. The female heads on the obverse now have the eye in profile and show beauty and variety, and the horses are even exceptionally represented in rapid action. With the short rule of Thrasybulus, the last brother of the house, it came to an end, and the age of the democracy (466–406 B.C.) began. The victories by land and sea of Gelo and Hiero had established the power of the city on a sure basis, and fifty years of prosperity followed. To the earlier part of this age belong the beautiful transitional coins in which the female heads are marked by a youthful simplicity of beauty combined with fanciful and even fantastic treatment of the hair; the reverses remain extremely severe. Towards the close of this age, beginning about 430, there are very fine works, the first signed coins, with the old dignity yet with greater freedom of style, the horses of the quadriga in rapid movement.

The victory of Syracuse in the contest with Athens was the occasion for the reissue of ten-drachm pieces, commonly but erroneously called medallions. On the reverses of these are a victorious chariot and a panoply of arms, representing the prizes offered at the games by which the Syracusans commemorated the defeat of the Athenians on the Assinarus in 413. On the obverses is the head of the local nymph Arethusa. The designs are by the artists Cimon (Pl. I. fig. 8), Euaenetus, and a third who is nameless. These pieces continued to be issued down to about 360 B.C. through the Dionysian period. Contemporary with them are numerous splendid tetradrachms—signed and unsigned—as well as the first gold and bronze issued by Syracuse. The interference of Dion in Syracusan politics (357–353) was marked by the introduction of an electrum coinage, and of a silver didrachm of Corinthian type, corresponding in weight to the tridrachm of Corinth, and with the same types, the head of Athena and the Pegasus. The Dionysian dynasty closed in anarchy, until Syracuse appealed to Corinth, and Timoleon was sent to restore order (344 B.C.). His advent marks an epoch in Sicilian coinage. He restored the gold coinage and issued various silver coins which allude to Corinth and to liberty, and under his influence many small cities in Sicily awoke to political life as members of Timoleon's league and issued a scanty but interesting bronze coinage. The Syracusan democracy was overthrown in 317 B.C. and the city seized by Agathocles (317–289 B.C.), the worst of the tyrants of Syracuse. In the course of his reign he adopted the royal style, and his coins, a reflection of earlier work, give his name first without and then with the title king—a double innovation. The most interesting of his coins are those which bear allusions to his campaign in Africa.

The tyrant Hicetas (288–280 B.C.) and the next ruler, Pyrrhus, king of Epirus (278–275 B.C.), continue the coinage, Pyrrhus issuing money in the name of the Syracusans and also striking his own pieces. The departure of Pyrrhus led to the establishment by Hiero II. (*c.* 270–216 B.C.) of a dynasty which, so long as he ruled, restored the ancient prosperity and preponderance of the rule of his namesake. At first content with inscribing his name alone, he soon not only takes the title of king, conferred on him in the early years of his reign, but also places his portrait on the money. Of his time is the beautiful portrait of his queen Philistis. The money of the short reign of Hieronymus (215–214 B.C.) and of the brief democracy which fell before the Romans (214–212 B.C.) close the independent series of this great city. But her name still appears in bronze money issued after the conquest.

Other Cities of Sicily.

Taking the rest of the money of Sicily in alphabetical order, we first note a very fine bronze coin bearing a beautiful female head, perhaps that of Sicilia, crowned with myrtle, and a lyre, which belongs to the time of Timoleon's league. This coin is conjecturally attributed to Adranum. The first great town is Agrigentum, represented by archaic, transitional, and fine coins, the fine series ending with the overthrow of the city by the Carthaginians in 406 B.C.—a blow from which it never recovered. The usual types are the eagle and the fresh-water crab, but in the age of finest art we see two eagles devouring a hare (cf. Aeschylus, *Agam.* 109 seq.) and a victorious chariot; these occur in the rare decadrachm (Pl. I. fig. 9), on which the river-god Acragas himself drives the car, and the tetradrachms. The eagle is superior to that of Croton, inferior to that of Elis. Many of the bronze coins are of good work. The type most worthy of note is the head of a river-god, with the name Acragas, which was that of the local stream, and on the reverse an eagle standing on an Ionic capital, the Olympic turning-post. The success of Agrigentum at the games is attested by Pindar, while Virgil (*Aen.* iii. 704), Gratius (*Cyneg.* 526) and Silius Italicus (xiv. 210) mention its ancient renown for horses.

The money of Camarina is of especial beauty and interest. Camarina struck but few coins before the year of liberation (461), soon after which was issued a didrachm having on the obverse a helmet upon a round shield and on the reverse a pair of greaves, between which is a dwarf palm. This piece is followed by tetradrachms and didrachms of the best period, most beautiful in style, and varying a little from difference of age. The tetradrachms bear on the obverse the head of Heracles in the lion's skin, and on the reverse Athena as a victor at the Olympic games in a quadriga. It was Athena, protector of the city (πολιάοχε Παλλάς), whose sacred grove was made more illustrious by the success of Psaumis. The didrachms have on the obverse the head of a river-god, portrayed as a young man with small horns and with wet hair. Of the two rivers of Camarina, the Oanus and the Hipparis, the Hipparis is here represented, for in one case the name is given on the coin. Pindar seems to show the same preference, for, while he merely mentions the Oanus (ποταμὸν . . . Ὦανιν), he speaks of the sacred channels by which the Hipparis watered the city (σεμνοὺς ὀχετούς, Ἵππαρις οἷσιν ἄρδει στρατόν). On the reverse the nymph Camarina (Ὠκεανοῦ θύγατερ . . . Καμαρίνα) is seen carried across her lake (ἐγχωρίαν . . . λίμναν) by a swan swimming with expanded wings, while she aids it by spreading her veil in the manner of a sail. Some of these didrachms have on either side, around the chief device, fresh-water fishes. The series of Catana comprises fine archaic tetradrachms and others of the time of the best art. The archaic tetradrachms have the types of a river in the form of a man-headed bull and of the figure of Victory, of a type remarkably advanced for the time at which they were struck. From 476 to 461, under the name of Aetna, its coinage is represented especially by a unique tetradrachm (Pl. I. fig. 10), with a wonderful head of Silenus, and Zeus as the god of the volcano holding a thunderbolt and a sceptre made of a vine-branch; before him is an eagle perched on one of the Aetnaean pines. The head of Apollo succeeds, with for reverse the victorious quadriga, in one case passing the turning-post, an Ionic column. Historically interesting is a small silver coin issued by Catana and Leontini in alliance between 405 and 403. Eryx towards the end of the 5th century produced some rare tetradrachms on which Eros is represented at the knees of his mother, asking for the dove which she holds.

Gela is represented by coins of which the archaic tetradrachms must be especially mentioned. They have on the obverse the forepart of the river-god Gelas, whence the city took its name. The Gelas is represented as a bull, having the face of a bearded man. On the reverse is a victorious quadriga, in some examples represented passing

an Ionic column, as on coins of Catana. A beautiful tetradrachm represents the city goddess (Sosipolis) placing a wreath on the head of the monstrous river-god. A little later is a tetradrachm which has types of the head of the Gelas as a young man horned, surrounded by three fishes, and on the reverse Victory in a biga with a wreath above. Small gold coins, and a didrachm representing a Geloan cavalryman spearing an Athenian hoplite, are among the coins issued shortly before the fall of Gela in 405. The money of Himera is of great interest. The oldest didrachms of Himera, which probably began in the 6th century B.C., bear on the obverse a cock and on the reverse an incuse pattern; later, a hen. During the time that Thero of Agrigentum held the city (before 480 to 472), the crab of Agrigentum appears on the didrachms. The transitional tetradrachms bear on the one side a victorious quadriga and on the other a nymph sacrificing, near whom a little Silenus stands under the stream of a fountain issuing from a lion's head in a wall. Leontini is represented by tetradrachms with the head of Apollo and the victorious car, which gives place to a lion's head. The series of Messene begins, when the town was called Zancle, or, as it is written upon the coins, Dancle, with early drachms or smaller pieces of the Aeginetan weight, and of very archaic work. On the obverse is a dolphin, and around it a sickle; on the reverse the earliest pieces repeat the same design incuse (as in the earliest coinage of S. Italy), but later we find a shell in the midst of an incuse pattern. The place is said to have received its name on account of the resemblance of the harbour to a sickle (ζάγκλον or ζάγκλη). Next to these first coins of Zancle may be placed, as the oldest piece of the Attic weight, a tetradrachm with the Samian types, a lion's scalp on one side and on the other the head of a calf, and bearing the inscription **ΜΕΣΣΕΝΙΟΝ**. This coin was doubtless struck during the rule of the Samians, who took the place about 494 B.C., at the instigation of Anaxilaus, tyrant of Rhegium, by whom they were subsequently expelled (Thucyd. vi. 4). The next pieces are the earliest of those which have on the obverse the mule-car and on the reverse a running hare, like the contemporary coins of Rhegium, with the same devices and equally of the rule of Anaxilaus. These types cease at Rhegium, though they continue at Messene, some of the tetradrachms bearing them being of the age of fine art. About 450 there must have been a temporary restoration of the Zancleans, who struck a tetradrachm with Poseidon and the dolphin as types. A fine piece of rather later date represents Pan caressing a hare. When the town had been seized (287 B.C.) by the Mamertini, money was struck with their name. Naxos is represented by early Aeginetic drachms with an archaic head of Dionysus. Immediately after the year of liberation (461) it produced a tetradrachm with a head of Dionysus and, on the reverse, a squatting Silenus, remarkable for the study of anatomical detail (see Pl. I. fig. 11). These types are repeated in a less severe style some fifty years later, when also an engraver Procles signs some pretty didrachms. Segesta is represented by coins from about 480 B.C. We first notice the head of the nymph Segesta and a hound, probably the river-god Crimisus; then the same type for reverse associated with a young hunter accompanied by two hounds—a charming composition. Another interesting type is a victorious car driven by Persephone, who carries ears of corn.

In the series of the city of Selinus the first coins are didrachms, bearing on the obverse a leaf and on the reverse an incuse square. The city and the river of the same name no doubt derived their name from the plant σέλινον (probably wild celery, *Apium graveolens*), the leaf of which must be here intended. Tetradrachms and didrachms of transitional and of good art have devices of more than usual interest. The obverse exhibits a river-god, sometimes the Selinus, sometimes the Hypsas, sacrificing at an altar to the god of healing, while on the didrachm a wading-bird is sometimes seen behind him, as if departing. The obverse of the didrachms shows Heracles subduing the bull, and the reverse of the tetradrachms generally shows a quadriga in which Apollo stands drawing his bow, while Artemis is charioteer. The reference in all these cases must be to the driving away of the pestilence from the neighbourhood of Selinus by the draining of the marshes.

The Siculo-Punic coins, that is, those actually struck by the Carthaginians in Sicily, will best be dealt with under Carthage, below.

The islands of Melita, Gaulos and Cossura near Sicily issued late coins which belong to the African series, showing a curious mixture of Phoenician and Egyptian elements in some of their types. Of Lipara there is heavy bronze money on the Sicilian system, having on the obverse a head of Hephaestus, or sometimes a figure of the same divinity seated, holding a hammer and a vase, which he seems to have just formed.

The Tauric Chersonese, &c.

In the Tauric Chersonese there are interesting coins, in the three metals, of the city of Panticapaeum, the modern Kertch. Their obverse usually bears the head of Pan and their reverse a griffin and other subjects; some are of fine Greek style. The gold is of higher weight than usual, owing to the cheapness of the metal at this place. The money of Sarmatia, of Dacia, and of upper and lower Moesia, is chiefly bronze of the Graeco-Roman class. In Sarmatia we may notice the autonomous and imperial pieces of Olbia, which alone amongst Greek cities produced a series of cast bronze coins, and in Dacia the series bearing the name of the province. The Roman colonia Viminacium in upper Moesia is represented by numerous coins of a late time. Of Istrus, in lower Moesia, there are drachms having a strange type on the obverse, representing two beardless heads, side by side, the one upright and the other upside down; on the reverse is an eagle devouring a fish. The style of these coins is in general fair, though it sometimes approaches to barbarism. Apollonia Pontica produced fine silver coins with a head of Apollo and an anchor. There are abundant Greek imperial coins of Marcianopolis and Nicopolis, while Tomi is represented in this class as well as by autonomous money.

Thrace.

The coins of Thrace are of high interest. Here and in Macedonia we observe the early efforts of barbarous tribes to coin the produce of their silver mines, and the splendid issues of the Greek colonies; and we see in the weights the influence of the Asiatic Greeks and the Athenians. The oldest coins are of the early 5th century B.C., and there are others of all subsequent times, both while the country was independent and while it was subject to the Romans, until the cessation of Greek coinage. Some of the best period are of the highest artistic merit. So long as they maintain any general distinctive peculiarities of fabric and design, that is, from their commencement until the age of Philip, the Thracian coins resemble those of Macedonia. The money of Abdera comprises tetradrachms and smaller coins of the periods of archaic and fine art, all but the latest of the Phoenician standard, ultimately superseded by the Persic. The principal type is a seated griffin, copied from its mother-city, Teos. The reverse type, an incuse square, has at first four divisions, but in the age of the finest art contains a variety of beautiful subjects, the signets of the magistrates. Aenus is remarkable for the great beauty of some of its coins. These are tetradrachms of Attic weight, of the late archaic and best ages. The interesting turning-point from growth to maturity is seen in a vigorous head of Hermes in profile, wearing the petasus. A little later is the splendid series of facing heads, the broad, severe, and sculptural treatment of which is truly admirable, and far superior to the more showy handling of the same subject in later drachms. A goat is the reverse type of the larger coins. The money of the city of Byzantium begins with coins on the Persic standard of good style, having on the obverse a bull above a dolphin and on the reverse an incuse square of four divisions, and closes with the series of bronze coins issued under the empire. The star and crescent type first appears in the Roman period. Of Maronea, anciently famous for its wine, there is an interesting series, among which we notice fine tetradrachms of Phoenician weight, having on the obverse a prancing horse and on the reverse a vine within a square. The standard changes to Persic, of which there is a beautiful series of didrachms. Then the series is interrupted by the rule of the Macedonian kings, and resumed in a barbarous coinage of the native Thracians, issued in the second and first centuries before the Christian era, consisting of spread Attic tetradrachms with the types of the head of beardless Dionysus crowned with ivy and on the other side his figure. The Greek imperial coins of Pautalia and Perinthus are worthy of notice. Among those of the latter town we may mention fine pieces of Antoninus Pius and Severus, and large coins, commonly called medallions, of Caracalla and other emperors. The money of the imperial class issued by Philippopolis, Serdica and Trajanopolis should also be noticed. In the Thracian Chersonese the most important series is one of small autonomous silver pieces, probably of the town of Cardia. There is a limited but highly interesting group of coins of Thracian kings and dynasts. The earliest are of kings of the Odrysae, including Sparadocus and Seuthes I., who began to reign in 424 B.C., and whose money bears the two remarkable inscriptions **ΣΕΥΘΑ ΚΟΜΜΑ** and **ΣΕΥΘΑ ΑΡΓΥΡΙΟΝ**. It closes with the issues of Roman vassals, such as Cotys IV. (A.D. 12–19). Lysimachus, commonly classed as king of Thrace, belongs to the group of

Alexander's western successors (see below). Among the islands of Thrace, Imbros with its trace of Pelasgic worship, and, equally with Lemnos, showing evidence of Athenian dominion, and Samothrace with the Asiatic worship of Cybele yield in interest to Thasos. Here a long and remarkable currency begins with very early Persic didrachms, the obverse type a Silenus carrying a nymph, the reverse an incuse square of four divisions. Under the Athenian supremacy we see a decline of weight, and in style the attainment of high excellence. After this we observe coins of Phoenician weight, bearing for their obverse types the head of Dionysus. These are of the best period of art, and some tetradrachms are among the very finest Greek coins. The head of Dionysus is treated in a sculptural style that is remarkably broad and grand. The massive, powerful features, and the formal hair, nearly falling to the neck in regular curls like those of the full beard, are relieved by a broad wreath of ivy-leaves, designed with great delicacy and simplicity. The reverse bears a Heracles kneeling on one knee and discharging his bow—a subject powerfully treated. Of a far later period there are large tetradrachms, much resembling those of Maronea, with the same type of the beardless Dionysus, but on the reverse Heracles.

Macedonia.

The money of Macedonia both civic and regal is of great variety and interest. It begins at an early time, probably towards the end of the 6th century B.C. The old pieces are of silver, bronze having come into use a century later, and gold about the middle of the 4th century B.C. The character of the coinage resembles that of Thrace; the earliest pieces are of the Phoenician, Babylonic and Attic standards. The most remarkable denominations are the pieces of eight and twelve Phoenician drachms. The largest coins are of the time of Alexander I. (498–454), and somewhat earlier, and indicate the metallic wealth of the country more than its commercial activity. The chief groups of coins are those of the Pangaean, Bisaltian, Strymonian and Chalcidian districts, of the kings of Macedon and Paeonia, and of Macedon under the Romans. This last series begins with the coins of the "regions" issued by permission of the senate and bearing the name of the Macedonians, from 158 to 150 B.C.; these are followed by coins of the Roman generals against Andriscus and of the pretender himself, and, from 146 onwards, of the Roman province. Under the empire a large series of bronze coins was issued in the name of the Koinon, *i.e.* the provincial diet. As regards the earlier civic coinage: the coinage of Acanthus comprises fine archaic tetradrachms of Attic weight and others of Phoenician weight and very vigorous in style, of the commencement of the period of good art. The type of their obverse is a lion seizing a bull (cf. Herodot. vii. 125 f.). The money of Aeneia is chiefly interesting from its bearing the head of the hero Aeneas; and on one extraordinary coin of archaic fabric, an Attic tetradrachm, the subject is the hero carrying Anchises from Troy, preceded by Creusa carrying Ascanius; this is in date before 500 B.C. The town of Amphipolis is represented by a long series. There are Phoenician tetradrachms of about 400 B.C. having on the obverse a head of Apollo, facing, sometimes in a splendid style, which recalls the art of the immediate successors of Pheidias (Pl. I. fig. 12). The reverse type is a flaming race-torch in an incuse square. The territory of Chalcidice is eminent for the excellence of some of its silver coins. There is a very early Attic tetradrachm of Olynthus, with a quadriga, and an eagle within a double square, which reminds us of the idea of the great Sicilian currencies, the record of Olympic victory. The Phoenician tetradrachms of the best period struck by the Chalcidian League (392–379 B.C., and later), Olynthus being probably the mint, are of great stylistic interest (Pl. I. fig. 13). The obverse bears the head of Apollo in profile crowned with laurel. It is in very high relief and treated with great simplicity, though not with the severity of somewhat earlier pieces. The delicacy of the features is balanced by the simple treatment of the hair and the broad wreath of laurel. On the reverse is a lyre. There is an early series of coins of Lete, none later than about 480. The obverse type is a satyr with a nymph, and on the reverse is an incuse square divided fourfold, first diagonally and then in squares. Mende has money of Attic weight, the types being connected with Silenus, who on a tetradrachm of fine style is portrayed reclining, a wine-vase in his hand, on the back of an ass; the reverse bears a vine. Of Neapolis (Datenon) there are early coins with the Gorgon's head and the incuse square, which in the period of fine art gives way to a charming head of the "Virgin Goddess" crowned with olive. The coins of Philippi in the three metals are mainly of the time of Philip II., who, having found a rich gold mine near Crenides, changed its name to Philippi. The gold coins are Attic staters, the silver pieces of the Phoenician or Macedonian weight, like Philip's own money. The earliest bear the name of the "Thasians of the Mainland," who immediately preceded Philip's colony. All bear the head of young Heracles in a lion's skin, and a tripod. Imperial pieces were struck by the city as a colonia. There is a long but late series of Thessalonica which in the time of the regions was the mint of the second region; the numerous bronze coins of the Roman period show a figure of Cabirus among other types. Uranopolis has a few coins with very curious astronomical types, probably issued by the eccentric Alexarchus, brother of Cassander. The issues of the Thraco-Macedonians are extremely interesting. They are all just anterior to, or it may be contemporary with, Alexander I. of Macedon. The leading coins are octadrachms of the Phoenician standard. They have usually but one type, the reverse bearing a quadripartite incuse square. Their sudden appearance and heavy weight are due to the working of the silver mines on the border of Macedonia and Thrace. The usual types are a warrior leading a horse or a yoke of oxen. The coins bear the names of the Bisaltae, Getas, king of the Edoni, the Orrescii and other tribes. Besides these there are very curious Attic decadrachms of the Derronians of Sithonia, bearing the unusual type of an ox-car, in which is a figure seated, and on the reverse a symbol of three legs.

Kings of Macedonia.

The oldest coins of the Macedonian kings are of Alexander I., from 498 to 454 B.C., the contemporary of Xerxes. These are Phoenician octadrachms, having on the obverse a cavalryman by the side of a horse, and coins of a lower denomination with the same or a similar type. The money of Alexander's successors illustrates the movement of art, but it is not until the reign of Philip II. that we have an abundant coinage. He first strikes gold pieces, chiefly Attic didrachms, from the produce of his mine near Philippi (Pl. I. fig. 14). They are of fair style, and bear on the obverse the head of Ares. On the reverse is a victorious Olympic biga. These coins were afterwards known as Φιλίππειοι and the gold money of Alexander as Ἀλεξάνδρειοι—appellations which probably did not include larger or smaller pieces. Horace calls the gold coins of Philip "Philips" ("regale nomisma Philippos," *Epist.* ii. 1, 232). The silver coinage of Philip is mainly composed of tetradrachms of the Phoenician standard (Pl. I. fig. 15). Their type of obverse is a head of Zeus and of reverse either a horseman wearing a causia or a victor in the horse-race with a palm—these last coins being the best of Philip's, although the horse is clumsy.

The coinage of Alexander the Great, both in the number of the cities where it was issued and in its abundance, excels all other Greek regal money; but its art is, without being despicable, far below excellence. The system of both gold and silver is Attic. The gold coins are distaters or gold tetradrachms, staters or didrachms (see Pl. I. fig. 17), hemistaters or drachms, with their half or a smaller denomination. The types of the distaters or staters, which last were the most common pieces, are for the obverse the head of Athena and for the reverse Victory bearing a naval standard. The largest silver piece is the decadrachm, which is of extreme rarity. The types of the tetradrachms and most of the lower coins are on the obverse the head of Heracles in the lion's skin and on the reverse Zeus seated, bearing on his hand an eagle (Pl. I. fig. 16). The head has been supposed to be that of Alexander, but this is not the case, although there may be some assimilation to his portrait. The great currency was of tetradrachms. The coinage was struck in different cities, distinguished by proper symbols and monograms. The classification of the series is difficult, but is gradually advancing. (For Alexander's Eastern coinage see § iv. Oriental Coins.)

The coinage of Alexander is followed by that of Philip Arrhidaeus, with the same types in gold and silver. That of Alexander IV. was issued by Ptolemy I. alone. In these coins the types of Alexander were modified, the dead king being represented with the ram's horn of Ammon, and wearing an elephant's skin head-dress and aegis. Meanwhile Seleucus, Lysimachus, Antigonus, king of Asia, struck Alexander's money with their own names, and the tetradrachms of Macedonia were generally of this kind until the time of Philip V. The same coinage, marked by a large flat form, was reissued later by

various cities, especially of western Asia, when the Romans, after the battle of Magnesia in 190 B.C., restored the liberties which Alexander had granted. The series of Alexandrine money is interrupted by various small coinages and the later issues of Lysimachus, king of Thrace, with a fine portrait—head of Alexander with the ram's horn, as the son of Zeus Ammon, a work sometimes worthy of Lysippus and an excellent indication of his style. The reverse has a figure of Athena holding a little Victory (Pl. I. fig. 19). The coins of Demetrius I. (Poliorcetes) comprise fine tetradrachms, some of the types of which have an historic reference. They bear either on the obverse his portrait with a bull's horn and on the reverse a figure of Poseidon, or on the one side a winged female figure (Victory) on the prow of a galley, blowing a trumpet, and on the other Poseidon striking with his trident. The latter types cannot be doubted to relate to the great naval victory which Demetrius gained over Ptolemy in 306; the Victory reproduces the "Victory of Samothrace," dedicated by Demetrius and now in the Louvre. The tetradrachms of Antigonus I. (Gonatas), which are of inferior style and work to those of Demetrius, have types which appear to refer in like manner to the great event of his time. The obverse type is a Macedonian buckler with the head of Pan in the midst, and the reverse type Athene Promachos. The head of Pan is supposed to have been taken as a device in consequence of the panic which led to the discomfiture of the Gauls at Delphi. Another pair of types, the head of Poseidon and Apollo seated on the prow of a warship, probably refers to the victory of Leucolla about 258 B.C. The tetradrachms of Philip V. have on the obverse a head in the helmet of Perseus, representing probably Philip's son, Perseus, in the character of that hero. The reverse bears a club. Other tetradrachms and smaller coins have a simple portrait of Philip. The tetradrachms of Perseus are of fair style, considering the time at which they were struck. They bear on one side the king's head and on the other an eagle on a thunderbolt. Andriscus (Philip VI., 150-149 B.C.) issued tetradrachms some of which represent him as Perseus. The coins of the Paeonian kings (from about 359 to 286 B.C.) show Macedonian influence, but are semi-barbarous.

The coin systems of northern Greece, Thessaly, Epirus, Corcyra, Acarnania and Aetolia present certain difficulties which disappear if we consider them as originally Aeginetan, modified in the west by Corinthian, and later by Roman, influence. The coinage of Thessaly represents very few specimens of a remote period, while pieces of the best time are numerous. These are in general remarkably like the finest coins of Sicily and Italy, although the style is simpler. The prevalence of the horse and horseman is significant. The money of the Thessalian Confederacy, being of late date (196–146 B.C.), is of little interest. The commonest types are the head of Zeus crowned with oak and the Thessalian Athena Itonia in a fighting attitude. The coinage is resumed in imperial times. Numerous small places, such as Gomphi, Homolium, Lamia, Phalanna, produced coins of considerable beauty; more extensive are the issues of Pharsalus, Pherae (with fine coins of the tyrant Alexander), and especially Larissa. The last series begins with archaic pieces and some of the early period of good art, but sometimes of rather coarse execution. The small silver pieces have very interesting reverse types relating to the nymph of the fountain, and to be compared for mutual illustration with the didrachms of Terina and with some of those of Elis. These are followed by coins of fine work. The usual obverse type is the head of Larissa, the nymph of the fountain, facing, and on the reverse is generally a horse, either free or drinking. The head is treated in a very rich manner, like that of the fountain-nymph Arethusa, facing, on tetradrachms of Syracuse; indeed, the debt to the Sicilian type is obvious. The bronze money is also good. The wine-producing island of Peparethus, off the Thessalian coast, is represented by a remarkable series of Attic tetradrachms (about 500–480 B.C.) with a variety of types, partly Dionysiac.

Thessaly.

The coinage of Illyria (strictly Illyris or Illyricum) is usually of inferior or rude art; the pieces are Aeginetic, ultimately changing to Corinthian, and then, in 229 B.C., to the standard of the Roman *Victoriatus*. Of Apollonia there is a large series. The earliest (early 4th century) have the Corcyraean types of the cow and the calf and the floral pattern; the latest, usually the head of Apollo and three nymphs dancing round a fire, the outer ones holding torches. Dyrrhachium, which never bears on its coins the more famous name of Epidamnus, is represented by an important series. First there are reduced Aeginetan didrachms with Corcyraean types. These are succeeded by tridrachms with Corinthian types, and of Corinthian weight; and then the old types are resumed, but the standard is that of the victoriatus. Dyrrhachium, it must be remembered, was founded partly by Corcyraean and partly by Corinthian colonists. The Illyrio-Epirote mining towns, Damastium, &c., struck barbarous silver coins in the 4th century; on some of the small pieces we see an ingot of metal or a miner's pick.

Illyricum.

The coins of Epirus are of higher interest and beauty than those of Illyria. Of the Epirots there are bronze coins of the regal period (342-272 B.C.), and both silver and bronze of the republic (238-168 B.C.), with the heads of the Dodonaean Zeus and Dione, together or apart. Ambracia is represented by silver pieces, with on the one side a head of Dione, on the other the obelisk of Apollo Agyieus.

Epirus.

The series of Greek imperial money of Nicopolis must also be mentioned. The coinage of the kings begins under Alexander I. His coins have been found in the three metals, but they are rare. It is probable that both gold and silver were struck in Italy while he was in that country. The coins of Pyrrhus in all metals are of high interest, and remarkable for their beauty, though the style is usually florid. There can be little doubt that they were for the most part struck in Italy and Sicily, at Tarentum and Syracuse. The tetradrachm has for the type of the obverse a head of the Dodonaean Zeus crowned with oak and for that of the reverse Dione seated. A fine didrachm bears on the obverse a head of Achilles helmeted, with for the reverse Thetis on a sea-horse carrying the shield of her son. Among the copper coins of Pyrrhus we must remark the beautiful ones with the portrait of his mother Phthia.

The coinage of the island of Corcyra begins with very early reduced Aeginetic didrachms and drachms of the 6th century. The types are the cow suckling the calf and the floral pattern, as at Dyrrhachium. These leading subjects are varied in later times by others illustrating the Corinthian origin of the nation, its maritime power, and the fame of its wine. Not the least curious are the bronze pieces with galleys bearing their names, as Freedom, Glory, Orderly Government, Corcyra, Comus, Cypris, Victory, Youth, Preserver, Fame, Light-bearer. The abundant bronze series goes on under the emperors.

Corcyra.

The coins of Acarnania are not remarkable for beauty or for variety in their types. The money of several cities in the 4th century B.C. is Corinthian in types and weight. That of the Acarnanian League (229–168 B.C.) bears the head of the Acheloüs as a man-headed bull and the seated Apollo Actius. Of Leucas the silver coins show the archaic cultus-figure of Aphrodite Aeneias.

Acarnania.

In Aetolia the gold and silver coins of the Aetolian League have some merit (279–168 B.C.). The gold pieces have on the obverse the head of Athena or that of Heracles in the lion's skin and on the reverse Aetolia personified, seated on Gaulish and Macedonian shields (a figure dedicated after the repulse of the Gauls; Paus. x. 18, 7). These subjects recur, with others indicating the hunter-life of the population, on the silver money; of especial interest are the head of Atalanta and the Calydonian boar, and the spear-head with which he was slain. On some of the copper the spear-head and the jaw-bone of the boar are seen.

Aetolia.

The coinage of Locris, Phocis and Boeotia is entirely on the Aeginetic standard. The coins of the Locri Epicnemidii are mainly didrachms, struck at Opus, with the head of Persephone and the figure of the Lesser Ajax in a fighting attitude, sometimes accompanied by his name. These coins were struck between 369 and 338 B.C., and are remarkable for the manner in which a Syracusan head is copied, if indeed the dies were not actually in some cases made in the western city.

Locris.

The money of Phocis begins at a very early age, some time in the 6th century B.C., and extends in silver down to the conquest by Philip (346 B.C.). The prevalent type is a bull's head. The generals Onymarchus and Phalaecus in the Sacred War placed their names on bronze coins. Delphi, geographically included in Phocis, strikes very remarkable money, wholly distinct in types from the Phocian. The principal subjects are heads of rams and goats, the symbols of Apollo as a pastoral divinity, a dolphin (Apollo Delphinius), the omphalos and tripod, and a negro's head, which has not been satisfactorily explained. The Amphictyonic Council struck beautiful didrachms, probably on the occasion of Philip's presidency (346 B.C.), with the head of Demeter, and the Delphian Apollo seated on the omphalos. Under Hadrian and the Antonines there is an imperial coinage of Delphi, some pieces bearing the representation of the temple of Apollo, on one type the letter **E** appearing between the columns of the face, representing the mystic Delphic **EI**, on which Plutarch wrote a treatise.

Phocis.

The coinage of Boeotia is chiefly of a period anterior to the reign of Alexander, under whom the political importance of Thebes and the whole country came to an end. The standard until the end of the 4th century is Aeginetic. The main characteristic of the money is the almost exclusive use of the Boeotian shield as the obverse type, marking the federal character of the issues. These were struck by various cities, or by Thebes as ruling the League. The earliest pieces are drachms, presumably of Thebes, issued between 600 and 550 B.C.

Boeotia.

These are followed by didrachms of the same and other cities until the time of the Persian War. The result of the unpatriotic policy of Thebes and most of the towns of Boeotia was the degradation of the leading city, and the coins reveal the curious fact that Tanagra for a time became the centre of the League-coinage. We now notice the abandonment of the old incuse reverse and the adoption of regular types, the wheel at Tanagra and the amphora at Thebes. These types increase, and indicate several cities during the short period of Athenian influence (456–446 B.C.). The democratic institutions were next overthrown, and Thebes became again the head of Boeotia, and struck alone and in her own name, not in that of the League. To the earlier part of this period belong splendid didrachms with reverse types chiefly representing Heracles, subsequently varied by heads of Dionysus in a series only less fine. With the peace of Antalcidas (387 B.C.) Thebes lost her power, the League was dissolved, and the other Boeotian cities issued a coinage of some merit. In 379 B.C. Thebes became the chief state in Greece, and the patriotic policy of Pelopidas and Epaminondas is shown in the issue of the Boeotian coins at the great city without any name but that of a magistrate. Among those which occur is **ΕΠΑΜ**, or **ΕΠΑΜΙ**, who can scarcely be any other than the illustrious general (Pl. I. fig. 18). After the battle of Chaeronea (338 B.C.), swiftly followed by the destruction of Thebes, the coinage is comparatively unimportant, save only for the appearance of new league-money of Attic weight, with the head of Zeus and the figure of Poseidon, between 288 and 244 B.C.

In Attica the great series of Athens is dominant. Eleusis issued a small bronze coinage of good style in the 4th century. Oropus and the island of Salamis also had an unimportant coinage. The Athenian coinage, apparently introduced by Solon, begins with didrachms on the Euboic standard, which, owing to the fame of the Athenian money, received the name of Attic. The type is an owl, the reverse having only the incuse square. These didrachms were succeeded under Peisistratus by the well-known Attic tetradrachms with head of Athena on the obverse, and owl and olive-spray on the reverse (Pl. I. fig. 20). The change supposed to have been introduced by Hippias (Pseudo-Arist. *Oecon.* ii. 4) was merely one of nomenclature; by calling in the coinage and reissuing it at double its old nominal value he only paid back half of what he had received. To what had previously been called didrachms he gave the name of tetradrachms, by which they have since been known. An obol bearing the name of Hippias himself, and types similar to those of Athens, was probably issued by him during his exile. From the time of the Persian wars the helmet of Athena is adorned with three olive-leaves. A rare decadrachm corresponds at Athens to the Demareteia at Syracuse, and was probably issued for similar reasons in commemoration of victory over the barbarians. Otherwise historical events seem to have left little record in the coinage and the Athenians deliberately affected archaism in the style of their coins, which bear no mark of the splendour of Athens as the centre of the sculptor's art. No doubt commercial reasons dictated this conservative policy, which makes the coinage of Athens a disappointment in numismatics. Her money was precious for its purity not only in the Greek world but among distant barbarians, so that imitations reach us from the Punjab and from southern Arabia, and any change would have injured its wide reception. There are many divisions of silver coinage with the types a little varied, and some different ones; and towards the end of the 5th century (probably in 407 B.C.) gold and bronze were introduced. The gold, of good quality and bad style, was never plentiful. The Macedonian empire put an end to the autonomy of Athens, and when the money is again issued it is of a wholly new style and the types are modified. The great series of spread tetradrachms may be dated from about 229 B.C., and lasted probably until the time of Augustus. The obverse type is a head of Athena with a richly-adorned helmet, unquestionably borrowed from the famous statue by Pheidias in ivory and gold, but a poor shadow of that splendid original, and an owl on an amphora within an olive-wreath. The earliest coins have the monograms of two magistrates, the later the names of two who are annual (although the nature of their offices is not certain—possibly they were λειτουργίαι), and, during the period 146–86, a third name, of the treasurer of the prytany in which the coin was issued. Among the names are those of Antiochus (175 B.C.), afterwards Antiochus IV. of Syria, and of Mithradates the Great (Pl. II. fig. 1) and his creature, Aristion (87–86 B.C.); but comparatively few of the coins can be dated exactly. Mithradates issued the only gold staters in this series. The symbols in the field often represent local statues of great interest. The abundance of this money shows the great commercial importance of Athens in these later times. Under the empire Athens issued only quasi-autonomous coins, but these are of great archaeological value as they bear representations of the Acropolis, with the grotto of Pan, the statue of Pallas Promachus, the Parthenon, and the Propylaea, with the steps leading up to the latter; of the theatre of Dionysus, above which are caverns in the rock, and higher still the Parthenon and the Propylaea; and of various statues and groups of sculpture. Megara and other places in Megaris issued a small but interesting coinage.

Athens.

The money of the island of Aegina is of especial interest since with it coinage originated, so far as Greece proper is concerned, probably fairly early in the 7th century B.C. There is no good evidence for connecting the institution of the coinage with Pheidon, king of Argos, who established a system of measures and weights, known as the Pheidonian. The weight of the coins is of course on the Aeginetic standard. The oldest pieces are very primitive didrachms, bearing on the obverse a sea-tortoise and on the reverse a rude incuse stamp (Pl. II. fig. 2). Afterwards the stamp becomes less rude, and later has a peculiar shape. The sea-tortoise is also replaced by a land-tortoise. There are some coins of the early part of the fine period of excellent work. The great currency was of didrachms. The bronze coins are not remarkable, but some appear to be of an earlier time than most Greek pieces in this metal.

Aegina.

The series of Achaea begins under the Achaean League in the time of Epaminondas, with a fine Aeginetic stater and smaller coins in the name of the Achaeans. The later silver coins are either Attic tetrobols or Aeginetic hemidrachms. On all but the earliest, *i.e.* after about 280 B.C., monograms or symbols indicate the cities which were members of the league; on the later bronze coins the names are given in full. The type of the silver is the head of Zeus Homagyrius, the reverse bearing the monogram of the Achaeans in a laurel-wreath. The oldest bronze repeats the silver types; the later bear a standing Zeus and a seated Demeter, with the name of the city at full length. About forty-five cities are represented by this coinage.

Achaea.

Corinth is represented by a very large series of coins, the weight of which is always on the Corinthian standard, equivalent to Attic but differently divided,—the Corinthian tridrachm, the chief coin, corresponding to the Attic didrachm. The oldest pieces, of the 6th century B.C. (some perhaps even earlier), bear on the obverse Pegasus with the letter ϙ, koppa, the initial of the name of Corinth, and on the reverse an incuse pattern. In course of time (about 500 B.C.) the head of Athena in an incuse square occupies the reverse. The incuse square disappears, as generally elsewhere, in the early period of fine art. Of the age of the excellence and decline of art we find beautiful work, though generally wanting in the severity of the highest Greek art (Pl. II. fig. 3). Pegasus is ordinarily seen galloping, but sometimes standing or drinking, the koppa is usually retained, and the helmet of Athena, always Corinthian, is sometimes bound with an olive-wreath. The smaller coins have the same reverse, but on the obverse a charming series of types, principally female heads, mostly representing Aphrodite. There are some drachms with Bellerophon in a combatant attitude mounted on Pegasus on the one side and the Chimaera on the other. The autonomous bronze money is poor, but often of fair work, and interesting, especially when the type relates to the myth of Bellerophon. In 46 B.C. this city was made a colonia; and we have a large and interesting series of the bronze coins struck by it as such,

Corinth.

including the remarkable type of the tomb of Lais. The coins of the "colonies" of Corinth form a long and important series, struck by Acarnanian towns with Corcyra, and in the west by Locri Epizephyrii in Italy and Syracuse. Some of these cities were not strictly colonies of Corinth, but the Pegasus staters struck by them form a homogeneous group. They range from the time of Dion (357 B.C.) to nearly the end of the 3rd century. The coins are distinguished by the absence of the koppa, and bear the names or monograms of the cities.

Patrae, Sicyon, &c.

There are bronze coins of Patrae as an important Roman colonia, and silver and bronze money of Phlius, both of the period of good art. The coinage of Sicyon, on the Aeginetic standard dominant in the rest of the Peloponnesus, is disappointing for a famous artistic centre. It begins shortly before the period of fine art; in that age the silver is abundant and well executed, but the leading types, the Chimaera and the flying dove within an olive-wreath, are wearying in their repetition, and good work could not make the Chimaera an agreeable subject. Small coins with types of Apollo are the only subjects which suggest the designs of the great school of Sicyon.

Elis.

The money of the Eleans is inferior to none in the Greek world in its art, which reaches the highest level of dignified restraint, and in the variety of its types, which are suggested by a few subjects. The leading types are connected, as we might expect, with the worship of Zeus and Hera and Victory, the divinities of the great Panhellenic contest at Olympia, and the coinage is rather the money of Olympia than of the Eleans as a civic community. The prevalent representations are the eagle and the winged thunderbolt of Zeus, the head of Hera and the figure of Victory. The series begins early in the 5th century B.C. with coins, some of which are didrachms (Aeginetic), having as subjects an eagle carrying a serpent or a hare, and on the reverse a thunderbolt or Victory bearing a wreath—archaic types which in their vigour promise the excellence of later days. From 471 to 421 B.C., while Elis was allied with the Spartans, such types continue; the eagle and Victory (sometimes seated) are both treated with great force and beauty, and the subject of seated Zeus is remarkable for its dignity. The Argive alliance (421–400 B.C.) seems marked by the pre-eminence given to Hera, whose head may suggest the famous statue of Polycleitus at Argos. About the same time was issued a didrachm with a noble head of Zeus (Pl. II. fig. 4), which probably recalls, though it is not a copy of, the Zeus of Pheidias. This alliance broken, the old types recur. Magnificent eagles, some admirably designed on a shield, and eagles' heads (see Pl. II. fig. 5), the seated Victory, and fantastically varied thunderbolts mark this age. Among the artists' signatures at this time is ΔΑ, which may represent the sculptor Daedalus of Sicyon. In 364 B.C. the coinage is interrupted for a year, the Pisatans, who conducted the festival then, issuing small gold coins; these are immediately followed by Elean money with the heads of Zeus and the nymph Olympia. Aristotimus, who was tyrant in 272 B.C., issued coins with his initials. The coinage closes with imperial money, some types of which have a local interest, notably two of Hadrian bearing the head and figure of Zeus, copied from the famous statue by Pheidias.

Cephallenia, &c.

Cephallenia gives us the early silver coins of Cranii, the money of Pale, of charming style, with the figure of Cephalus on the reverse, and that of Same, all cities of this island. Of the island of Zacynthus there are silver pieces, usually of rather coarse work, but sometimes of the style of the best Cephallenian money. Some struck in 357 bear the name of Dion of Syracuse, who collected the forces for his expedition in this island. The coins of Ithaca are of bronze. They are of interest on account of their common obverse type, which is a head of Odysseus.

Messene.

Returning to the mainland, we first notice the money of Messene, or the Messenians. The earliest coin is a splendid Aeginetic didrachm, having on the obverse a head of Persephone, and excels in design the similar subjects on the money of Syracuse, from which it must have been copied, for it is of about the time of Epaminondas. It shows the purer style of Greece, which, copying Syracusan work, raised its character. On the reverse is a figure of Zeus, inspired by the work of Hageladas. The other silver coins are of about the period of the Achaean League. The bronze money is plentiful, but not interesting.

Laconia.

Lacedaemon, as we might have expected, has no early coins, the silver money being mostly of the age of the Achaean League, but the King Areus (309–265 B.C.) and the tyrant Nabis (207–192 B.C.) are represented by Attic tetradrachms. On a tetradrachm of the time of the former is a figure of the Apollo of Amyclae. Among the types of the autonomous bronze pieces may be noticed the head of the Spartan lawgiver Lycurgus, with his name.

Argolis.

The series of Argos in Argolis begins early in the 5th century. The standard is Aeginetic. The first pieces are the drachm and smaller denominations with a wolf, half-wolf or wolf's head on the obverse, and A on the reverse. A rare iron coin was issued with these types. At the end of the 5th century begin the didrachms, which have for the obverse type the head of the Polycleitan Hera—a design which is not equal to that of the coins of Elis, the style being either careless or not so simple. The reverse type of the drachm represents Diomedes stealthily advancing with the palladium in his left hand and a short sword in his right. A 4th-century drachm of Epidaurus represents the famous seated figure of Asclepius by Thrasymedes of Paros.

Arcadia.

Of the money of Arcadia some pieces are doubtless among the most ancient struck by the Greeks; and the types of these and later coins are often connected with the remarkable myths of this primeval part of Hellas, showing particularly the remains of its old nature-worship. The first series to be noticed is that of the Arcadian League; it begins about 500 B.C. with hemidrachms having the type of Zeus Lycaeus seated, the eagle represented as if flying from his hand, and a female head. Of a later time, from the age of Epaminondas, there are very fine coins (issued from Megalopolis) with the head of Zeus, and Pan seated. The coins of Heraea begin deep in the 6th century B.C. The earliest have for obverse type the veiled head of Hera, and on the reverse the beginning of the name of the town. The silver coins of Mantinea (beginning early in the 5th century) have on the obverse a bear, representing Callisto, the mother of Arcas, who was worshipped here, and on the reverse the letters **MA**, or three acorns, in an incuse square. Later coins, especially the bronze, have subjects connected with the worship of Poseidon at this inland town. The silver coins of Pheneus must be noticed as being of fine work. The didrachms of the age of Epaminondas have a head of Persephone, and Hermes carrying the child Arcas. The obverse type is interesting as a copy of the Syracusan subject, as in Locris and Messene. As in Locris, the merit is in the greater force and simplicity of the face, here most successful, the hair being treated more after the Syracusan manner than after that of the Messenians, who simplified the whole subject. The finest coin attributed to Stymphalus is a magnificent didrachm of the age of Epaminondas, with a head of the local Artemis laureate, and Heracles striking with his club. The smaller silver coins have on the one side a head of Heracles and on the other the head and neck of a Stymphalian bird. There were representations of these birds in the temple of Artemis. The series of Tegea is not important, but two of the reverse types of its bronze coins are interesting as relating to the myth of Telephus and to the story that Athena gave a jar containing the hair of Medusa to her priestess Sterope, daughter of Cepheus, in order that she might terrify the Argives should they attack Tegea in the absence of Cepheus, when Heracles desired his aid in an expedition against Sparta. Iron coins were issued by Tegea, and also perhaps by Heraea.

Crete.

The peculiar position of Crete and her long isolation from the political, artistic and literary movements of Hellas have been already touched on. It is not until the age of Philip V. that Crete appears in the field of history, and then only as the battle-ground of rival powers. The most remarkable influence of this age was when Athens, by the diplomacy of Cephisodorus, succeeded about 200 B.C. in drawing the Cretans into a great league against Philip V. of Macedon. That this project took actual shape is proved by the issue at all the chief mints of the island of tetradrachms with the well-known types of Athens, to be distinguished from the Atticizing types of other cities at this time.

The oldest coins are probably of about 500 B.C., but few cities seem to have issued many until a hundred years later. Then there is a great outburst of coinage, sometimes beautiful, sometimes barbarously careless, which lasts until the age of Alexander, when the local currency was probably in great part replaced by Alexandrine coins. At the end of the 3rd century the local coinages are revived until the Roman conquest (67 or 66 B.C.). The chief issue is of silver; bronze is less abundant; and gold is all but unknown. The Cretan types have a markedly local character, yet they copy in some instances other coinages. The chief divinities on the pieces are Zeus, Hera, Poseidon, Heracles and Britomartis, and the leading myths are those of Minos, the story of the Minotaur and the labyrinth being prominent, and also that of Europa. There is frequent reference to nature-worship as in Sicily, yet with a distinctive preference for trees, the forms of which, however, lend themselves readily to the free representation of Cretan art, which may in part explain their prominence. The peculiarity of Cretan art lies in its realism. At some places, as Aptera, Polyrrhenium and Cydonia, we find engravers' signatures. The weight is at first Aeginetic of reduced form; and in the resumption of the coinage after Alexander's time it is Attic.

Of the island in general there are Roman silver and bronze coins of the earlier emperors, some of which are of fine work for the period. The most interesting types are Dictynna and

Zeus Cretagenes. The autonomous coins are very varied. The obverse of the didrachms of Aptera bears a head of Artemis and the reverse a warrior (*Ptolioikos*) before a sacred tree. Of Chersonesus, the port of Lyctus, there are didrachms of coarse style, with a head of Artemis Britomartis, who had a temple at the place. The head is copied from Stymphalus, as also is one of the reverse types, Heracles wielding his club. The money of Cnossus is of great interest. The oldest coins may be as early as 480 B.C. They bear the figure of the Minotaur as a bull-headed man, kneeling on one knee, and a maeander-pattern, in one case enclosing a star (the sun), in another a head (Theseus?). Of the period 431–350 there are didrachms with the head of Persephone, and the labyrinthine pattern enclosing the sun or the moon or a bull's head for the Minotaur, and at length becoming a regular maze. To this time belongs the wonderful coin in the Berlin Museum with Minos seated, his name in the field, and the head of Persephone within the maeander-pattern. In the later 4th century a head of Hera (copied without spirit from the coins of Argos) occupies the obverse of didrachms and drachms, and the reverse has a maze through which the way may be clearly traced. This series closes with Alexander's empire, and the native coinage disappears until the league of Cephisodorus revives it with the Athenian tetradrachm of Attic weight, bearing the name of the Cnossians. It is of inferior style, and is followed by base coins with heads of Minos and Apollo, and the Labyrinth, either square as before or in a new circular form, which is interesting as showing it was a mere matter of tradition.

There are interesting coins of Cydonia, some of them of beautiful style and work. One bears an engraver's name, Neuantos. The head is that of a Maenad, and the reverse has a figure of the traditional founder Cydon, stringing his bow, who on other didrachms is seen suckled by a bitch. The style is good, but the execution poor. Gortys, or Gortyna, is represented by most remarkable coins, which generally allude to the myth of Europa. Didrachms of archaic style have on the obverse Europa carried by the bull and on the reverse the lion's scalp. These pieces are followed by a remarkably fine class of spread didrachms; the best are of about 400 B.C. They have on the obverse Europa seated in a pensive attitude on the trunk of a tree, doubtless the sacred plane at Gortyna, mentioned by Pliny, which was said never to shed its leaves, and on the reverse a bull suddenly turning his head as if stung by a fly (Pl. II. fig. 6). Nothing in Greek art exceeds the skill and beauty of these designs. The truth with which the tree is sketched, and the graceful position of the forlorn Europa are as much to be admired as the fidelity with which the bull is drawn, even when foreshortened, sharply turning his head, with his tongue out and his tail raised. These designs, beautiful in themselves, are strikingly deficient in fitness, and afford equally strong illustrations of the excellencies and of the one great fault of the art of Cretan coins. Many pieces of the same class are of rude execution. Of Itanus there are remarkable coins, the earlier, some of which are of good style, with the subject of a Tritonian sea-god (Glaucus?) and two sea-monsters. Lyctus (Lyttus) is represented by strangely rude pieces, with the types of a flying eagle and a boar's head. The coins of Phaestus form a most interesting series. Among the didrachms are some of admirable work, with on the obverse Heracles slaying the Hydra with his club and on the reverse a bull. Others have on the obverse Heracles seated on the ground, resting. Another noticeable obverse type is the beardless Zeus seated in a tree, with his Cretan name, Velchanos. On his knee is a cock crowing, showing that he was a god of the dawn. We also find Talos, the man of brass, said to have been made by Hephaestus or Daedalus, portrayed as a winged youth naked, bearing in each hand a stone, and in a combatant attitude. Apollonius Rhodius (*Argonaut.* iv. 1638 sqq.) relates that Talos prevented the Argonauts from landing in Crete by hurling stones at them, until he was destroyed by the artifice of Medea. The important town of Polyrrhenium is represented by carefully-executed coins with a head of Zeus and a bull's head. A later piece has a *whiskered* head of Apollo, probably Philip V. in that character. Priansus shows the remarkable type of Persephone seated beside a date-palm, placing her right hand on the head of a serpent in reference to the myth of the birth of Zagreus. As usual, the figure is foreshortened. The reverse has a standing figure of Poseidon. Rhaucus has Poseidon beside his horse. The rare didrachms of Sybritia, or Sybrita, may fitly close the series; one, among the most exquisite of Greek coins, has heads of Dionysus and Hermes in high relief (see Pl. II. fig. 7); another has on the obverse a charming subject, Dionysus seated on a running panther, and on the reverse Hermes drawing on his right buskin,—a delightful figure. Another beautiful type is a seated Dionysus.

Euboea.

The coinage of Euboea is all on the native standard, of which the Attic was a variety. It includes some of the very earliest Greek money. Carystus begins in the time of the Persian War with the type of the cow and calf, as in Corcyra, and its special badge is the cock. In the period 197–146 it issued gold drachms. Chalcis, the mother of western colonies, has already in the 6th century, or even earlier, a long series with the wheel-type and an incuse diagonally divided, and later, a nymph's head and an eagle devouring a serpent. Eretria probably begins as early as Chalcis, but the obverse type is the Gorgon's head. This is succeeded by the same type and a panther's or bull's head, and fine late archaic coins bear the cow and the cuttle-fish. Eretria was probably the mint of coins with the head of a nymph and a cow or cow's head struck in the name of Euboeans in the fine period. Of Histiaea the usual type is the head of a Maenad and a female figure seated on the stern of a galley.

Cyclades and Sporades.

Among the other islands classed after Euboea, Amorgos must not be passed by, as a bronze coin of Aegiale, one of its towns, presents the curious type of a cupping-glass. To Andros has been attributed a group of early coins bearing an amphora. The silver money of Carthaea, Coressia and Iulis in Ceos is extremely old, beginning in each case in the 6th century. The weight is Aeginetic, and there are didrachms and smaller coins. The usual types of Carthaea are an amphora and then a bunch of grapes; that of Coressia is a cuttle-fish and dolphin. The coinage of Delos is insignificant. Melos coined from the early 5th century to imperial times: its chief type is a canting one, the μῆλον (pomegranate). Naxos is represented by early Aeginetic didrachms and coins of the fine period, the latter being chiefly bronze pieces of remarkably delicate and good work. The types are Dionysiac. A 7th-century coin with the head of a satyr (one of the earliest representations of the human head on a coin) is probably Naxian. Of Paros there are early Aeginetic didrachms with the type of a kneeling goat and beneath a dolphin. Of the 3rd and 2nd centuries B.C. there are Attic didrachms with a head, possibly of Artemis, at first of a charming style, and a goat on the reverse. There are very archaic Aeginetic didrachms of Siphnos, which was famous for its gold and silver mines. A late tetradrachm of Syros is interesting as representing the Cabiri.

Asia Minor.

The coinage of Asia begins with that of Asia Minor. It falls into certain great classes—first, the ancient gold and electrum, Lydian and Greek, in time succeeded by electrum or gold and silver, all struck in the west and mainly on the coast. Then the Persian dominion appears in the silver money of the satraps, circulating with the gold and silver of Persia, and the Greek money is limited to a few cities of the coast, none save the electrum of the great mint of Cyzicus uninterrupted by the barbarian. With the decay of the barbarian empire the renewed life of the Greek cities is witnessed by a beautiful coinage along the coast from the Propontis to Cilicia. On Alexander's conquest autonomy is granted to the much-enduring Hellenic communities, and is again interrupted, but only partially, by the rule of his successors, for there was no time at which Asia Minor was wholly parcelled out among the kings, Greek or native. The Romans, after the battle of Magnesia (190 B.C.), repeated Alexander's policy so far as the cities of the western coast were concerned, and there is a fresh outburst of coinage, which, in remembrance, follows the well-known types of Alexander. When the province of Asia was constituted and the neighbouring states fell one by one under Roman rule, the autonomy of the great cities was generally reduced to a shadow. Still the abundant issues of imperial coinage, if devoid of high merit, are the best in style of late Greek coins, and for mythology the richest in illustration.

The oldest money is the electrum of Lydia, which spread in very early times along the western coast. This coinage, dating from the 7th century B.C., has an equal claim with the Aeginetic silver to be the oldest of all money.

Probably the two currencies arose at the same period, and by interchange became the recognized currency of the primeval marts; otherwise we can scarcely explain the absence of Asiatic silver, though it is easy to explain that of European electrum or gold. The electrum of the coins is gold—the precious metal washed down by the Pactolus—with a native alloy of a varying part of silver. Its durability recommended it to the Lydians, and it had (by convention) the advantage of exchanging decimally with gold, then in the ratio 13·3 to silver. But this commercial advantage allowed the issue of electrum coins on silver standards, while it was natural to coin them on those of gold; hence a variety of weight-systems perplexing to the metrologist. The classification of the earliest coins is exceedingly obscure; it is hardly possible to say which were struck in Lydia itself, which in the Greek coast cities, such as Miletus; but the majority probably belong to Greek mints. The most primitive in appearance are those in which the obverse is merely marked with lines, corresponding to the original rough surface of the die, while the reverse has three depressions, an oblong one flanked by two squares (Pl. II. fig. 8); there are also various coins of small denomination with a plain convex obverse, and a single rough depression on the reverse, known from the excavations at Ephesus. Both the Babylonian and the Phoenician standards were in use in early times. This double currency, as Head suggests, was probably intended, so far as the Lydians were concerned, for circulation in the interior and in the coast towns to the west, the Babylonic weight being that of the land trade, the Phoenician that of the commerce by sea. Croesus (Pl. II. fig. 9) abandoned electrum, and issued pure gold (on the Babylonic and gold-shekel standards), and pure silver (Babylonic), the silver stater exchanging as the tenth of the Euboic gold stater. These results are explained by the metrological data given earlier in this article. Of the Greek marts of the western coast we have a series of early electrum staters, for the most part on the Phoenician weight. An interesting homogeneous group was issued by the various cities which took part in the Ionian revolt (500–494 B.C.). The Euboic weight naturally found its way into the currencies, but was as yet limited to Samos. Phocaea, Teos and Cyzicus, with other towns, followed from a very early period the Phocaic standard, which for practical purposes may be called the double of the Euboic. They alone before Croesus issued gold money, which was superseded at Phocaea and Cyzicus by electrum. This is the main outline of the native coinage of Asia Minor before the Persian conquest. Its later history will appear under the several great towns, the money of Persia (which circulated largely in Asia Minor) being treated in a subsequent place.

Oldest coinage

The first countries of Asia Minor are Bosporus and Colchis, the coins of the cities of which are few and unimportant. The autonomous coinages of the cities of Pontus are more numerous, but the only place meriting a special notice is Amisus, which almost alone of the cities of Pontus seems to have issued autonomous silver money. The common subjects of the bronze money of this place relate to the myth of Perseus and Medusa, a favourite one in this country.

Bosporus, Colchis, Pontus.

The regal coins are of the old kingdoms of Pontus and of the Cimmerian Bosporus, of the two united as the state of Bosporus and Pontus under Mithradates VI. (the Great), and as reconstituted by the Romans when Polemon I. and II. still held the kingdom of Mithradates, which was afterwards divided into the province of Pontus and the kingdom of Bosporus. The early coinage of the kingdom of Bosporus is of little interest. Of that of Pontus there are tetradrachms, two of which, of Mithradates IV. and Pharnaces I., are remarkable for the unflinching realism with which their barbarian type of features is preserved. Mithradates VI., king of Bosporus and Pontus, is represented by gold staters, and tetradrachms. The portrait on the best of these (see Pl. II. fig. 10) is fine despite its theatrical quality, characteristic of the later schools of Asia Minor. The kings of Bosporus struck a long series of coins for the first three and a half centuries after the Christian era. Their gold money (the only non-imperial gold allowed under the empire) is gradually depreciated and becomes electrum, and ultimately billon and bronze. They bear the heads of the king and the emperor, and are dated by the Pontic era (297 B.C.).

In Paphlagonia we must specially notice the coins of the cities Amastris and Sinope. The silver pieces of the former place bear a youthful head in a laureate Phrygian cap, probably representing Mithras, Amastris, the foundress, being seated on the reverse. The silver pieces of Sinope are plentiful. In the 4th century they bear the names of Persian governors. The types are the head of the nymph Sinope and, as at Istrus, an eagle preying on a dolphin. Bithynia is represented by a more important series. The provincial diet issued Roman silver medallions of the weight of cistophori (to be presently described), with Latin inscriptions, and bronze pieces with Greek inscriptions. The ordinary silver coins of Chalcedon strikingly resemble on both sides those of Byzantium, and a monetary convention evidently at times existed between these sister-cities. Of Cius, also called Prusias ad Mare, there are gold staters and smaller imperial silver pieces. Of Heraclea there are silver coins of good style; the most interesting type is a female head wearing a turreted head-dress, one of the earliest representations of a city-goddess (early 4th century). The tyrants of Heraclea, Clearchus, Satyrus, Timotheus and Dionysius are represented by coins. Of the imperial class there is a large series of Nicaea, and many coins of Nicomedia. The series of the Bithynian kings consists of Attic tetradrachms and bronze pieces, issued by Ziaëlas, Prusias I. and II., and Nicomedes I.–IV.

Paphlagonia.

Bithynia.

The fine Greek coinage of Asia may be considered to begin with Mysia. Cyzicus is in numismatics a most important city. Its coinage begins in the 6th century; and the famous electrum Cyzicene staters were struck here for nearly a century and a half (*c.* 500–350 B.C.). During that whole period they were not only the leading gold coinage in Asia Minor but the chief currency in that metal for the cities on both shores of the Aegean; the value at which they were rated was doubtless a matter of convention, and varied from time to time. The actual weight is of the Phocaic standard, just over 248 grains. The divisions were the hecta or sixth, and the twelfth. The extraordinary variety of "types" at Cyzicus is due to the fact that these types are really symbols differentiating the issues, the true badge of the city, the tunny-fish, being relegated to a subordinate position (Pl. II. fig. 11). The reverse invariably has the quadripartite incuse square in four planes of the so-called mill-sail pattern. The coins are very thick and the edges are rude. The art is frequently of great beauty, though sometimes careless. The silver coinage of Cyzicus comprises beautiful tetradrachms of the Rhodian standard, with a head of Persephone **ΣΩΤΕΙΡΑ**, veiled and wreathed with ears of corn. Both late autonomous and imperial coins in bronze are well executed and full of interest, the two classes running parallel under the earlier emperors.

Mysia.

Lampsacus is represented by a long series of coins. Its distinctive type is the forepart of a Pegasus, which occurs on its coins from the 6th century onwards. In the first half of the 4th century it issued splendid gold staters with various types (really, as at Cyzicus, symbols distinguishing the issues) on the obverse and the half-Pegasus on the reverse. The most remarkable type is a bearded head (probably of a Cabirus) with streaming hair in a conical cap, bound with a wreath, singularly pictorial in treatment as well as in expression (Pl. II. fig. 12). In contrast to this is a most carefully executed head of a Maenad with goat's ear; and other types of great interest are the Earth-goddess rising from the earth, and Victory nailing a helmet to a trophy, or sacrificing a ram.

The money of the great city of Pergamum is chiefly of a late time. Apart from some rare pieces of gold, the silver coinage is chiefly supplied by the money of the kings of Pergamum and by cistophori. The bronze pieces of the city are numerous, both autonomous and imperial, the two classes overlapping, and there are medallions of the emperors. The local worship of

Aesculapius is especially promient under the Roman rule. The chief coins of the kings are Attic tetradrachms, with on the obverse a laureate head of Philetaerus, the founder of the state, and on the reverse a seated Athene, the common type of Lysimachus, from whom Philetaerus revolted. Variations from these types are rare,the most important being a coin with the name of Eumenes (II.), representing his portrait and the Dioscuri. Otherwise the inscription is always **ΦΙΛΕΤΑΙΡΟΥ**. The cistophorus probably originated at Ephesus towards the end of the 3rd century, but was soon adopted for the Pergamene dominions, and down to imperial times was the only important silver currency in Asia Minor. It acquired its name from its obverse type, the *cista mystica*, a basket from which a serpent issues, the whole enclosed in an ivy-wreath. The reverse type represents two serpents, and between them usually a bow-case (Pl. II. fig. 13). The half and the quarter of the cistophorus have on one side a bunch of grapes on a leaf or leaves of the vine, and the club with the lion's skin of Heracles within an ivy-wreath. They were tetradrachms equal in weight to about three Attic drachms or three denarii. These coins became abundant when the kingdom of Pergamum was transformed into the province of Asia, and are struck at its chief cities, as Pergamum, Adramyttium, the Lydian Stratoniceia, Thyatira, Sardis, Smyrna, Ephesus, Tralles, Nysa, Laodicea and Apamea. They have at first the names of Greek magistrates, afterwards coupled with those of Roman proconsuls or propraetors. The silver medallions of Asia, the successors of the cistophori, range from Mark Antony to Hadrian and Sabina. They bear no names of cities, but some may be attributed by their references to local forms of worship. The obverse bears an imperial head, the reverse a type either Greek or Roman. The art is the best of this age, more delicate in design and execution than that of any other pieces, the Roman medallions excepted. One of the most remarkable imperial bronze coins of Pergamum represents the Great Altar (Pl. II. fig. 16).

The coinage of the Troad is interesting from its traditional allusions to the Trojan War. Of Abydos there is a fine gold stater, with the unusual subject of Victory sacrificing a ram, and the eagle, which is the most constant type of the silver money. One of the few imperial coins commemorates the legend of Hero and Leander. The late tetradrachms of Alexandria Troas bear the head of Apollo Smintheus, and on the reverse his figure armed with a bow. There is a long series of the town as a colonia, of extremely poor work. Ilium Novum strikes late Attic tetradrachms with a head of Athene, and on the reverse the same goddess carrying spear and distaff, with the inscription **ΑΘΗΝΑΣ ΙΛΙΑΔΟΣ**. On the autonomous and imperial bronze we notice incidents of the tale of Troy, as Hector in his car, or slaying Patroclus, or fighting; and again the flight of Aeneas. The island of Tenedos is represented by very early coins, and others of the fine and late periods. The usual obverse type of all the silver pieces is a Janus-like combination of two heads, presumably some primitive god and his consort; this double type is balanced on the reverse by the double-axe, which played an important part in the primitive cults of Asia Minor and the Aegaean. *Troas.*

In Aeolis the most noteworthy coins are the late tetradrachms of Cyme and Myrina, both of the time of decline, yet with a certain strength which relieves them from the general weakness of the work of that age. Cyme has the head of the Amazon Cyme, and a horse within a laurel-wreath; Myrina, a head of the Grynean Apollo and his figure with lustral branch and patera.

Lesbos is remarkable for having coined in base as well as pure silver, its early billon coins being peculiar to the island. This base coinage, which was probably common to Mytilene and Methymna, ceases about 450 B.C., when the Mytilenaean silver begins. Methymna has very interesting archaic silver coins, with the boar and the head of Athene. But the most important coinage of Lesbos is the beautiful electrum coinage (a unique stater, Pl. II. fig. 14, and innumerable sixths) which was issued from about 480 to 350. Phocaea in Ionia issued similar coins, distinguished by a seal (the badge of the city), and a convention regulating the weight and quality of the two coinages, and arranging for the two mints to work in alternate years, is still extant. The types vary accordingly, as at Cyzicus and Lampsacus. There is a long and important series of Mytilene of the imperial time, including very interesting commemorative coins, some of persons of remote history, as Pittacus and Sappho, others of benefactors of the city, as Theophanes the friend of Pompey, from whom he obtained for this his native place the privileges of a free city. The usual style for these persons is hero or heroine, but Theophanes is called a god, and Archedamis, probably his wife, a goddess.

The money of Ionia is abundant and beautiful. For the first century and a half (*c.* 700–545) the chief coinage is of electrum. To the 7th century belongs the remarkable coin inscribed **ΦΑΕΝΟΣ ΕΜΙ ΣΗΜΑ** ("I am the badge of the Bright One" or "of Phanes"), with a stag, which was perhaps issued at Ephesus. From 545 to the Ionic revolt (494) there is considerable diminution in the coinage; silver attains more importance. Thenceforward, the course of the coinage is fairly uniform until the period 301–190, when there is a general cessation of autonomous issues. After the battle of Magnesia there is a great revival, tetradrachms of Alexandrine and also of local types being issued in vast numbers. After the constitution of the Roman province of Asia (133), the cistophori supply the silver coinage. The imperial bronze coinage is numerous, with many interesting local types. Of the coins of the various cities the following demand mention. At Clazomenae in the 4th century there are splendid coins, having for types the head of Apollo, three-quarter face, and a swan. The chief pieces, the gold drachm and a half or octobol, and the silver stater or tetradrachm present two types of the head of Apollo, very grand on the gold and the silver, with the signature of Theodotus, the only known Asiatic engraver, and richly beautiful on the other silver piece. These coins are marked by the intense expression of the school of western Asia Minor. Colophon has fine severe coins of the 5th century with the head of Apollo and the lyre. *Ionia.*

The money of Ephesus is historically interesting, but very disappointing in its art, which is limited by the small range of subjects and their lack of beauty. The leading type is the bee; later the stag and the head of Artemis appear. Thus the subjects relate to the worship of the famous shrine. The oldest coins are electrum and silver, both on the Phoenician standard. The type is a bee and the reverse is incuse. The silver coinage continues with the same types, unbroken by the Persian dominion, until in 394 B.C. a remarkable new coin appears. When Conon and Pharnabazus defeated the Lacedaemonian fleet and liberated the Greek cities of Asia from Spartan tryanny a federal coinage was issued by Rhodes, Cnidus, Samos, Ephesus, Iasus and Byzantium with their proper types on the reverse, but on the obverse the infant Heracles strangling two serpents; these are Rhodian tridrachms. About this time the Rhodian standard was introduced, and a series of tetradrachms began with the bee, having for reverse the forepart of a stag looking back, and behind him a date-palm. The head of Artemis as a Greek goddess begins to appear in the 3rd century. Other series of coins follow with types associated with Artemis, Rhodian and Attic standards alternating; there are also Alexandrine tetradrachms and of course cistophori. The connexion of the city with Lysimachus, who called it Arsinoë, after his wife, is commemorated by coins inscribed **ΑΡΣΙ**. The Ephesian form of Artemis, as the cultus figure of a nature-goddess, first appears as a symbol on the cistophori, and then on gold coins struck during the revolt of 87–84, when Ephesus took the side of Mithradates. The imperial money provides many representations of the temples of the city, including that of the famous shrine of Artemis, which shows the bands of sculpture on the columns, as well as many other remarkable subjects, particularly the Zeus of rain seated on Mount Pelion, a shower falling from his left hand, while below are seen the temple of Artemis and the river-god Caÿster; on another coin the strange Asiatic figure of the goddess, frequent in this series, stands between the personified rivers Caÿster and *Ephesus.*

Cenchrius. The money of the Ionian Magnesia begins with the issue of Themistocles, when he was dynast under Persian protection. The ordinary silver coins (350–190 B.C.) representing a cavalryman and the river-god Maeander as a bull are common. After 190 B.C. we have spread tetradrachms of the decline of art, more delicately executed than those of Cyme and Myrina, with a bust of Artemis and a figure of Apollo standing on a maeander and leaning against a lofty tripod, the whole in a laurel-wreath. ***Miletus.*** The great city of Miletus is disappointing in its money. The period of its highest prosperity is too early for an abundant coinage, yet in the oldest electrum issues we see the lion and the sun of Apollo Didymeus. In the early 4th century the Carian dynasts issued coins from Ephesus. To about 350 B.C. belong the beautiful coins bearing the head of Apollo facing and the lion looking back at a sun, with the inscription **ΕΓ ΔΙΔΥΜΩΝ ΙΕΡΗ** (*scil.* *δραχμή*), showing that this was the "sacred" money of the famous temple at Didyma. The types of the head of Apollo in profile and the lion with the sun continue through a series of various standards with very rare Attic gold staters of the early 2nd century. Phocaea is represented by two very interesting currencies; an electrum series of hectae, characterized by a seal, the badge of the town, beneath the type, struck in convention with Mytilene (see above); and also a widespread early silver coinage, apparently common to the western colonies of the city. The autonomous money is wholly anterior to the Persian conquest. ***Smyrna.*** Smyrna issued in the 4th century a very rare coin with the head of Apollo and a lyre, of Colophonian style. Among the earliest coins of New Smyrna are some showing that Lysimachus named it Eurydicea after his daughter. After 190 B.C. it strikes Attic tetradrachms, with the turreted head of Cybele or the city or the Amazon Smyrna (Pl. II. fig. 15), and an oak-wreath sometimes enclosing a lion. A rare silver coin and common bronze coins present on the reverse the seated figure of Homer. A gold coin issued by the Prytaneis of the Smyrnaeans probably belongs to the time of the Mithradatic revolt against Rome (87–84). The imperial coins have numerous types, among others the two Nemeses appearing to Alexander in a vision.

Of Teos there are early Aeginetic didrachms, bearing on the one side a seated griffin and on the other a quadripartite incuse square. ***Teos.*** These ceased at the moment when the population left the town, destroyed by the Persians, and fled to Abdera, where we recognize their type on the coinage of the time. There are much later coins of less importance.

Chios and Samos, islands of Ionia, are represented by interesting currencies. Chios struck electrum and abundant silver. The type ***Chios.*** was a seated sphinx with curled wing, and before it stands an amphora, above which is a bunch of grapes; the reverse has a quadripartite incuse. The coins begin before the Persian conquest (490 B.C.).

The coinage of Samos is artistically disappointing, but as a whole has many claims to interest. The earliest money included electrum. ***Samos.*** The silver begins before 494 B.C. The types are the well-known lion's scalp and bull's head. The Athenian conquest (439 B.C.) is marked by the introduction of the olive-spray as a constant symbol on the reverse and the occasional occurrence of Attic weight. The Samians, having joined the anti-Laconian alliance after Conon's victory in 394 B.C., struck the coin with Heracles strangling the serpents already noticed under Ephesus; the Rhodian weight is here introduced. The long series of imperial money is not without interesting types. The most remarkable is the figure of the Samian Hera, which clearly associates her with the group of divinities to which the Ephesian Artemis belongs. Very noticeable also are the representations of Pythagoras, seated or standing, touching a globe with a wand.

The money of Caria does not present any one great series. Autonomous silver coins are not numerous except at Cnidus, ***Caria.*** and rarely of good style. Antiochia and Alabanda have tetradrachms in the 2nd century. The imperial coins of Antiochia and of Aphrodisias are worthy of notice. Cnidus is represented at first by archaic coins of Aeginetic weight, some as early as the first half of the 7th century, with a very rude head of Aphrodite. The head of the famous statue of Aphrodite by Praxiteles is not reproduced, but the whole statue figures on imperial coins. Among the imperial types of Halicarnassus the head of Herodotus is noteworthy. There is late silver money of Iasus with the head of Apollo, and a youth swimming beside a dolphin around which his arm is thrown. Idyma has silver pieces of fine style on which the head of Apollo is absolutely facing; the reverse type is a fig-leaf. On imperial coins of Mylasa the figure of the Zeus of Labranda holding double-axe and spear is represented. Of Termera we have the rare coin of its tyrant Tymnes, dating about the middle of the 5th century and struck on the Persic system.

The Carian satraps prove their wealth by their series of silver coins, which bear the names of Hecatomnus, Mausolus, Hidrieus and Pixodarus. The weight is Rhodian; the types are the three-quarter face of Apollo, and Zeus Labrandeus standing, holding the labrys or two-headed axe. Pixodarus also strikes gold of Attic weight. His silver is the best in the series, and clearly shows the Ionian style in its quality of expression.

Among the islands of Caria, Calymna begins in the 6th century or earlier with curious archaic Persian didrachms bearing a helmeted male head and on the reverse a lyre. The ***Calymna and Cos.*** series of Cos begins with small archaic pieces, the type a crab and the reverse incuse. Next come fine coins of transitional style and Attic weight, with the types of a discobolus before a tripod, and a crab. The break so common in the coinage of this coast then interrupts the issue, and a new coinage occurs before the time of Alexander. The weight is Rhodian, the types the head of Heracles and the crab. After Alexander there is another currency which ceases about 200 B.C. It is resumed later with the new types of the head of Asclepius and his serpent. This continues in Roman times. The bronze of that age comprises a coin with the head of Hippocrates and on the reverse the staff of Asclepius. Xenophon's head likewise occurs, and the portrait of Nicias tyrant in Cos (*c.* 50 B.C.) on his bronze. Imperial money ends the series.

The island of Rhodes, great in commerce and art, has a rich series of coins. The want of variety in the types—at the city of Rhodes almost limited to the head of Helios and the ***Rhodes.*** rose—is disappointing, but happily the principal subject could not fail to illustrate the movements of art, one of which had here its centre. The city of Rhodes was founded *c.* 408 B.C. on the abandonment by their inhabitants of the three chief towns of the island, Camirus, Ialysus and Lindus. The money of Camirus seems to begin in the 6th century B.C. The type is the fig-leaf, the weight Aeginetic, later degraded. The coins of Ialysus, of the 5th century, follow the Phoenician standard. Their types are the forepart of a winged boar and an eagle's head. The money of Lindus, apparently before 480 B.C., is of Phoenician weight, with the type of a lion's head. The people of the new city of Rhodes adopted another standard, the Attic, and very shortly abandoned it, except for gold money, using instead that peculiar weight which has been called Rhodian; this they retained until the last years of their independent coinage, when they resumed the Attic. The types are the three-quarter face of Helios and the rose. There is a grandeur and noble outlook in the earlier heads of Helios which well befits his character, but the pictorial style is evident in the form of the hair and the expression, which, with all its reserve, has a dramatic quality (see Pl. II. fig. 17). Towards the end of the 4th century the radiate head is introduced; the Alexandrine tetradrachms, which were issued after the battle of Magnesia, find a place in the Rhodian mintage. During the age after Alexander there is an abundant bronze coinage, with some pieces of unusual size. The series closes with a few imperial coins ranging from Nerva to Marcus Aurelius.

The early coinage of Lycia introduces us at once into a region of Asiatic mythology, art and language, raising many questions as yet without an answer. The standard of the oldest ***Lycia.*** coins (beginning about 520 B.C.) is low Persic, and it falls perhaps under Athenian influence, until it is often indistinguishable from the Attic. The Lycian character belongs to the primitive alphabets of Asia Minor, which combine with archaic Greek forms others which are unknown to the Greek alphabet, and it expresses a native language as yet but imperfectly understood. The art is stiff and delights in animal forms,

sometimes of monstrous types, which recall the designs of Phoenicia and Assyria. The most remarkable symbol is the triskeles or tetraskeles symbol, an object resembling a ring, to which three or four hooks are attached. It is supposed to be a solar symbol like the swastika. The oldest money has a boar or his fore-part and an incuse. This is succeeded by a series with an animal reverse, and then by one in which the hooked ring is the usual reverse type. The fourth series bears Lycian inscriptions, which give the names of dynasts and places. A fifth series is characterized by the type of a lion's scalp. This coinage reaches as late as Alexander's time. It is followed by silver and bronze money of the Lycian League before Augustus and under his reign, but ceasing in that of Claudius—the usual types of the chief silver piece, a hemidrachm, being the head of Apollo and the lyre. The districts of Cragus and Masicytus have coinages, as well as the individual cities. Besides this general currency there are some special ones of towns not in the League. The imperial money rarely goes beyond the reign of Augustus, and is resumed during that of Gordian III. There is a remarkable coin of Myra of this emperor, showing the goddess of the city, of a type like the Ephesian Artemis, in a tree; two woodcutters, each armed with a double axe, hew at the trunk, from which two serpents rise as if to protect it and aid the goddess. Phaselis is an exceptional town, for it has early Greek coins, the leading type being a galley.

The coinage of Pamphylia offers some examples of good art distinctly marked by the Asiatic formality. Aspendus shows a remarkable series of Persic didrachms, extending from about 500 B.C. to Alexander's time. The oldest coins have the types of a warrior and the triskelion or three legs, more familiarly associated with Sicily; it is probably a solar symbol. These coins are followed by a long series with the types of two wrestlers engaged and a slinger. The main legend is almost always in the Panphylian character and language. There are also very curious imperial types. The money of Perga begins in the 2nd century with Greek types of the Artemis of Perga. Her figure in a remarkable Asiatic form occurs in the long imperial series. Bronze coins earlier in date than the silver money with the Greek types have the Pamphylian title of the goddess, ΡΑΝΑΣΣΑΣ ΠΡΕΙΠΑΣ, "of the Lady of Perga." Side has at first Persic didrachms of about 480 B.C., their types the pomegranate and dolphin and head of Athene; then there are money with an undeciphered Aramaizing inscription of the 4th century and figures of Athene and Apollo, and late Attic tetradrachms, their types being the head of Athene and Victory. These were carried on by Amyntas, king of Galatia, when he made his mint in Side (36 B.C.). The pomegranate (*σίδη*) is throughout the badge of the city. *Pamphylia.*

The money of Pisidia is chiefly imperial. There is a long series of this class of the colonia Antiochia. The autonomous coins of Selge have the wrestlers and the slinger of Aspendus in inferior and even barbarous copies. Of Isauria and Lycaonia a few cities, including Derbe and the colonies of Iconium and Lystra, strike coins, chiefly of imperial time. *Pisidia, &c.*

Cilicia, for the most part a coastland, is numismatically of high interest. To Aphrodisias is assigned an interesting series of archaic coins with a winged figure and a pyramidal fetish-stone; in the 4th century Aphrodite is represented in human form seated between sphinxes; the Parthenos of Pheidias is also represented. Celenderis has a coinage beginning in the 5th century, with a horseman seated sideways on the obverse, and on the reverse a goat kneeling on one knee. Mallus has a most interesting series of silver coins, some with curious Asiatic types. Of Nagidus there are Persic didrachms of good style, one interesting type being Aphrodite seated, before whom Eros flies crowning her, with, on the other side, a standing Dionysus. Soli has silver coins of the same weight, the types being an archer or the head of Athene, one variety imitated from remote Velia, and a bunch of grapes. The coinage of Tarsus begins in the 5th century with Persic staters representing a Cilician king on horseback, and a hoplite kneeling. *Cilicia.*

In the 4th century it was the mint of a large series of satrapal coins, issued by Pharnabazus, Mazaeus and other governors (Issus, Mallus and Soli also sharing the cost of minting). The chief type is the Baal of Tarsus. The autonomous bronze of the Seleucid a e shows the remarkable subject of the pyre of Sandan, the local form of Heracles; and there is a long and curious imperial series. The coinage of Anazarbus (imperial, showing rivalry with Tarsus), Seleucia on the Calycadnus, Mopsus, and the priest-kings of Olba are also full of interest.

The coinage of the great island of Cyprus is, as we might expect from its monuments, almost exclusively non-Hellenic in character. The weight-system, except of gold, which is Attic, is Persic, save only in the later coins of some mints, struck on the reduced Rhodian standard, and a solitary Attic tetradrachm of Paphos. The art is usually very stiff down to about 400 B.C., with types of Egypto-Phoenician or Phoenician or of Greek origin. The inscriptions are in the Cyprian syllabic character and the earliest coins resemble the early Etruscan in being one-sided. The prevalent types are animals or their heads, the chief subjects being the bull, eagle, sheep, lion, the lion seizing the stag, the deer and the mythical sphinx. The divinities we can recognize are Aphrodite, Heracles, Athene, Hermes and Zeus Ammon. But the most curious mythological types are a goddess carried by a bull or by a ram, in both cases probably Astarte, the Phoenician Aphrodite. The most remarkable symbol is the well-known Egyptian sign of life. The coins appear to have been struck by kings until before the age of Alexander, when civic money appears. The mints to which coins are ascribed with certainty are Salamis, Paphos, Marium, Idalium and Citium. The coins of the Salaminian line are in silver and gold. The earlier, beginning with Evelthon about 560 B.C., have Cyprian, the later Greek inscriptions, the types generally being native, though after a time under Hellenic influence. They are of Evagoras I., Nicocles, Evagoras II., Pnytagoras and Nicocreon, and the coinage is closed by Menelaus, brother of Ptolemy I. The Phoenician kings of Citium, from about 500 to 312, strike silver and in one case gold, their general types being Heracles and the lion seizing the stag. Bronze begins soon after 400 B.C., and of the same age there are autonomous pieces in silver and bronze. There is Greek imperial money from Augustus to Caracalla (chiefly issued by the Κοινόν). The most remarkable type is the temple at Paphos, represented as a structure of two storeys with wings. Within the central portion is the sacred stone, in front a semicircular court. *Cyprus.*

The earliest coinage of Lydia is no doubt that of the kings, already described. The next currency must have been of Persian darics (gold) and drachms (silver), followed by that of Alexander, the Seleucids, and the Attalids of Pergamum, and then by the cistophori of the province of Asia. There is an abundant bronze coinage of the cities, autonomous from the formation of the province, and of imperial time, but mostly of the imperial class. The largest currencies are of Philadelphia, Sardis, Thyatira and Tralles. The art is not remarkable, though good for the period, and the types are mostly Greek. *Lydia.*

The coinage of Phrygia has the same general characteristics as that of Lydia, but the workmanship is poorer. Among noteworthy types must be noticed Men or Lunus, the Phrygian moon-god. There are curious types of Apamea, surnamed Kibotos or the Ark, and more anciently Celaenae. One of Severus represents the legend of the invention of the double pipe, a type already described. Of the same and later emperors are coins bearing the famous type of the ark of Noah and the name ΝΩΕ. The town of Cibyra is remarkable for a silver coinage of the 1st century B.C., of which the large pieces have the weight of cistophori. *Phrygia.*

Galatia has little to offer of interest. Trajan issued bronze imperial coins for the province, and there is imperial money of Ancyra, Pessinus and Tavium. The only remarkable regal issue is that of Amyntas, Strabo's contemporary, who struck tetradrachms at Side in Pamphylia. *Galatia.*

With the coinage of Cappadocia we bid farewell to Greek art and enter on the domain of Oriental conventionalism, succeeded by inferior Roman design coarsely executed. There is one large imperial series, that of Caesarea, intended for general circulation in the province. The issues range from Tiberius to Gordian III., and are in silver and bronze. The most common type is the sacred Mount Argaeus, on which a statue is sometimes seen—a remarkable type curiously varied. There are scanty issues of a few other towns. There is an interesting series of coins of the kings of Cappadocia, beginning with Ariarathes I. (*c.* 332–322 B.C.), who struck Persic drachms at Sinope and Gaziura, and continuing with other kings, called usually Ariarathes or Ariobarzanes, who struck Attic drachms and occasionally tetradrachms. The rare tetradrachms of Orophernes, a successful usurper (158–157 B.C.), bear a fine portrait. The coins of Archelaus, the last king set up by Antony (36 B.C.–A.D. 17), have a good head on the obverse. Of Armenia there are a few silver and bronze coins of late sovereigns. *Cappadocia, &c.*

The great series of Syrian money begins with the coinage of the Seleucid kings of Syria, only rivalled for length and

abundance by that of the Ptolemies, which it excels in its series of portraits, though it is far inferior in its gold money and wants the large and well-executed bronze pieces which make the Egyptian currency complete. The gold of the Seleucids is scarce, and their main coinage is a splendid series of tetradrachms bearing the portraits of the successive sovereigns. The reverse types are varied for the class of regal money. The execution of the portraits is good, and forms the best continuous history of portraiture for the third and second centuries before our era. The reverses are far less careful. The weight is Attic, but the cities of Phoenicia were ultimately allowed to strike on their own standard. Many of the coins of the earlier kings were issued in their Bactrian or Indian dominions. Seleucus I. (312–280 B.C.) began by striking gold staters and tetradrachms with the types of Alexander the Great. The same king, like his contemporaries, then took his own types: for gold staters, his head with a bull's horn, and on the reverse a horse's head with bull's horns; for tetradrachms, his own head in a helmet of hide with bull's horn and lion's skin, and Victory crowning a trophy, or the head of Zeus, and Athene fighting in a car drawn by four or two elephants with bull's horns. Antiochus I. (293–261), like his father, first struck tetradrachms with Alexandrine types, and then with his own head, Apollo on the omphalos occupying the reverse. The portrait of Antiochus has a characteristic realism. Antiochus III. (222–187) is represented by a fine and interesting series with a vigorous portrait. He alone of the Seleucids seems to have struck the great octadrachm in gold in rivalry of the Ptolemies. Coins dated by the Seleucid era (312 B.C.) first appear in his reign. The portrait of Antiochus IV. Epiphanes (175–164) is extremely characteristic, marked by the mad obstinacy which is the key to the tyrant's history. The most remarkable coin is a tetradrachm with the head of Antiochus in the character of Zeus. In his time mints became numerous in the bronze coinage, and there is a remarkable series in that metal with Ptolemaic types, marking his short-lived usurpation in Egypt. From the time of Demetrius I. (162–150) the silver tetradrachms bear both mints and dates. In one type the heads of Demetrius and Queen Laodice occur side by side. With Alexander I. Balas (152–144), Tyre and Sidon begin to strike royal tetradrachms on their own Phoenician weight. Tarsus also first strikes coins for him with the type of the pyre of Sandan. The money of young Antiochus VI. presents the most carefully executed portrait in the whole series, which, despite its weakness, has a certain charm of sweetness that marks it as a new type in art. The same artist's hand seems apparent in the fine portrait of the cruel usurper Tryphon, and also in the picturesque spiked Macedonian helmet with a goat's horn and cheek-piece which occupies the reverse. Antiochus VII. (138–129) continues the series with, amongst other coins, the solitary bronze piece of Jerusalem, bearing the lily and the Seleucid anchor. Alexander II. Zebina (128–123) is represented by a unique gold coin (Pl. II. fig. 18), as well as by silver and bronze. The empire closes with the money of the Armenian Tigranes (83–69), bearing his portrait with the lofty native tiara, and for reverse Antioch seated, the Orontes swimming at her feet (a copy of the famous group by Eutychides).

Syria.

There is a copper coinage of the Syrian *koinon* under Trajan; also of the cities of Commagene, Samosata and Zeugma, and less important mints. The money of the kings of Commagene is in bronze (*c.* 140 B.C. to A.D. 72).

Commagene.

Cyrrhestica has bronze coins of a few cities, nearly all imperial, the chief mints being Cyrrhus and Hieropolis. Hieropolis in the time of Alexander the Great issued some remarkable silver coins in the name of Abd-Hadad and Alexander himself, with figures of the Syrian goddess Atergatis, who also appears on its imperial coins.

Cyrrhestica.

Of Chalcidene there are bronze coins of Chalcis and of the tetrarchs, and Palmyrene shows only the small bronze pieces of Palmyra, the money of Zenobia and the family of Odenathus being found in the series of Alexandria.

Chalcidene, &c.

In Seleucis and Pieria, the four cities of Antioch, Apamea, Laodicea ad Mare and Seleucia Pieria issued a joint coinage inscribed ΑΔΕΛΦΩΝ ΔΗΜΩΝ about the middle of the 2nd century B.C. But the bulk of the money of this territory is of the great city of Antioch on the Orontes. The coinage is both autonomous bronze before and of Roman times, and imperial silver, base metal and bronze. Other mints (as Tyre and Sidon) in this same province issued silver of the same class as Antioch, with different symbols. A large series of coins was issued bearing on the reverse the letters S.C. (*Senatus consulto*), showing that the coinage was under the control of the Roman senate. Both Latin and Greek inscriptions are used until the reign of Trajan. The city is first called a colony on the coins of Elagabalus. The earliest coins are dated by various eras (Seleucid, Caesarian, Actian); later the emperor's consulships are used to date the silver. The leading types are the figure of Antioch seated, the river Orontes swimming at her feet, from the famous statue by Eutychides, and the eagle on a thunderbolt, a palm in front. Under Hadrian the eagle is represented carrying an ox's leg, a reference to the story of the foundation of the city when an eagle carried off part of the sacrifice and deposited it on the site which was consequently chosen. There are few other types. The series (which, strictly speaking, was not the local coinage of Antioch, but an imperial coinage for the province) is very full and includes money of the Syrian emperor Sulpicius Uranius Antoninus (who also struck bronze at Emesa and gold of the Roman imperial class). It ends with Valerian, though it begins anew in the Roman provincial money of the reform of Diocletian, to be noticed later.

Antioch.

Of the other cities of this district, Emisa presents the type of the sacred stone of Elagabal. The imperial money of Gabala shows the veiled cultus-statue of a goddess flanked by sphinxes. Laodicea has an important series. It begins with bronze money of the later Seleucids. The autonomous tetradrachms of the 1st century B.C. have a turreted and veiled female bust of the city, a favourite Syrian and Phoenician type. From 47 B.C. its title is Julia Laodicea; from Caracalla downwards it is a colonia; the inscriptions become Latin; then, very strangely, Greek on the obverse of the coins and Latin on the reverse. Seleucia has a similar regal autonomous and imperial currency, but does not become a colonia. A shrine containing the sacred stone of Zeus Casius, and the thunderbolt of Zeus Keraunius resting on a throne, are among the types.

Apamea, &c.

In Coele-Syria, Damascus issues coins from the 3rd century B.C. (beginning with Alexandrine tetradrachms) onwards; the city becomes a colonia under Philip I. The imperial money of Heliopolis (Baalbek), a colonia, shows a great temple (of the Zeus of Heliopolis) in perspective, another temple containing an ear of corn as the central object of worship, and a view of the Acropolis with the great temple upon it, and steps leading up the rock.

Coele-Syria, &c.

The coinage of Phoenicia is a large and highly interesting series. The autonomous money is here important, and indicates the ancient wealth of the great marts of the coast. The earliest coins were struck about the middle of the 5th century and usually bear Phoenician inscriptions. The coinage falls into three main periods; the first pre-Alexandrine; the second, that of Alexandrine, Ptolemaic and Seleucid rule; the third, that of the empire. In the first period Aradus strikes silver, usually on the Babylonian standard, staters with a head of Melkarth and a galley, and smaller denominations. All the other cities use the Phoenician standard. The regal silver coins of Byblus have a galley as obverse type; on the reverse, a vulture standing on a ram, or a lion devouring a bull. Here and at Sidon and Tyre portions of the types are represented incuse. Sidon has a large and important series of silver octadrachms and smaller denominations; on the obverse is a galley (at first with sails set, then without sails, first lying before a fortress, afterwards alone). On the reverse is the king of Persia in a chariot, or slaying a lion. These coins were issued by the kings such as Strato I. and II. and Tennes, and by the satrap Mazaeus. The early silver of Tyre has as reverse type an owl with a crook and flail over its shoulder; on the obverse a dolphin, or Melkarth riding on a sea-horse; a common symbol is the purple-shell (Pl. II. fig. 20). In the second period, besides Alexandrine silver and regal coins of the Ptolemies and Seleucidae, there are certain large and important issues of autonomous or semi-autonomous silver tetradrachms and smaller denominations, as at Aradus (head of the City, and Victory; also drachms with types copied from Ephesus: obv., bee, rev., stag and date-palm), Marathus (head of the City, and nude figure at Marathus seated on a pile of shields), Sidon (head of the City, and eagle), Tripolis (busts of the Dioscuri, and figure of the City holding cornucopiae) and Tyre (head of the Tyrian Heracles, Melkarth, and eagle). Tyre also issued a gold decadrachm with the head of the City, and a double cornucopiae. On these and other coins Sidon and Tyre claim the rights of asylum. Berytus first

Phoenicia.

coins in this period, sometimes under the name of Laodicea in Canaan. Ace-Ptolemais (Acre) was an important mint under the Ptolemies; for a time, under the Seleucidae, it was called Antiochia in Ptolemais. Besides the Seleucid era autonomous eras are in use at some of the cities, as at Aradus (259 B.C.), Sidon (111 B.C.) and Tyre (126 B.C.). Under the empire there are some very large coinages of bronze, besides a certain amount of silver resembling that of Antioch. The quasi-autonomous silver of Tyre was also issued as late as A.D. 57. Berytus (a *colonia*) has types relating to the cults of Astarte and Poseidon; Astarte is also prominent at Sidon (a colonia from Elagabalus onwards; a common type represents the wheeled shrine of the goddess) and Tripolis. At Byblus a temple is represented with a conical fetish. Tyre has many interesting types: Dido building Carthage; the Ambrosial Rocks; Cadmus fighting the serpent or founding Thebes, &c. Ptolemais issued coins as a colony from Claudius onwards.

In Trachonitis, the only city of importance is Caesarea Panias, with a famous grotto of Pan, perhaps represented on an imperial coin. Several cities in Decapolis issued imperial coins, among them Gadara and Gerasa. In Galilee the coins struck at Tiberias by its founder, Herod Antipas, may be mentioned. Samaria has money of Caesarea, both autonomous and imperial, the last for the most part colonial, and also imperial of Neapolis, among the types of which occurs the interesting subject of Mount Gerizim surmounted by the Samaritan temple. The coinage of Judaea is an interesting series. The money of Jerusalem is of high interest, and more extensive than appears at first sight. Here was struck the coin of Antiochus VII., with the native lily as a type, the series of the Maccabaean princes, that of the Roman procurators, and the bronze coins countermarked by the tenth legion, quartered by Titus in the ruins of the city. One of these bears the remarkable symbol of a pig. After the reduction of Judaea in the reign of Hadrian, Jerusalem was rebuilt as a colonia with the name Aelia Capitolina. The earliest coin commemorates the foundation. The coinage lasts as late as Valerian. Ascalon strikes autonomous silver and bronze, including remarkable tetradrachms with the portraits of Ptolemy Auletes, of his elder son Ptolemy XIV., and of his daughter Cleopatra (see Pl. II. fig. 21). There is also money of Gaza of some importance; the earliest coins are Attic drachms, &c., of barbarous style, inspired by Greek, especially Athenian models; on its imperial coins the god Marna, and Minos and Io are named.

Palestine.

The independent Jewish coinage begins with the famous shekels. They have been assigned to various periods, but the preponderance of evidence would class them to Simon Maccabaeus, to whom the right of coining was granted by Antiochus VII. The series is of shekels and half-shekels, of the weight of Phoenician tetradrachms and didrachms. The obverse of the shekel bears the inscription "the shekel of Israel," and for type a sacred vessel of the temple, above which (after year 1) is the letter indicating the year of issue and the initial of the word year. The reverse reads "Jerusalem the Holy," and the type is a flowering branch (Pl. II. fig. 19). The half-shekel differs in having the inscription "half-shekel" on the obverse. The types are markedly peculiar; the obverse inscription is equally so, for the regular formula of the neighbouring cities would give nothing but the name of the city; but the reverse inscription is like that of Tyre and Sidon, for instance, "of Tyre sacred and inviolable." This agreement is confirmatory of the assignment to Simon Maccabaeus. This coinage bears the dates of years 1, 2, 3, 4 (rare), and 5 (very rare). There has been much discussion as to the date. It is best reckoned from the decree of Antiochus VII. granting the right of coinage to Simon (139–138 B.C.). The coins of the fifth year were then struck by John Hyrcanus. The certain coins of the successors of Simon are small bronze pieces of John Hyrcanus (135–104), of Judas Aristobulus (104–103), of Alexander Jannaeus (103–76), who strikes bilingual Hebrew and Greek and also Hebrew coins, showing his native name to have been Jonathan, and of Antigonus (40–37), who has the Hebrew name Mattathiah. The types represent only inanimate objects. The Maccabaean coinage is followed by that of the Herodian family, equally of bronze, the two most important issues being those of Herod the Great and Agrippa II. The silver coinage under the early empire was chiefly supplied by the issues of Antioch and Roman denarii; the "penny" with Caesar's image and superscription was such a denarius. The money of the procurators of Judaea, in part parallel with the Herodian, is of small bronze coins, struck between A.D. 6–7 and A.D. 58–59, the latest period of their administration being as yet unrepresented. These are followed by two classes, the money of the first revolt (A.D. 66–70) and that of the second (suppressed A.D. 135). Both risings caused the issue of native coinage, some of which may be assigned with certainty to each. Of the first revolt are bronze pieces of years 2, 3 and 4. Of the second revolt are restruck Antiochene tetradrachms and Roman denarii, usually with the name of Simon, which appears to have been that of the leader surnamed Bar Cochebas. The obverse type of the tetradrachms or shekels is the portico of the temple; on the reverse are a bundle of branches and a citron, symbols of the feast of tabernacles. Besides this native currency there are coins struck in Palestine by Vespasian, Titus and Domitian.

Jewish coinage.

Of Roman Arabia there are bronze imperial coins of Bostra and less important mints; the kings of Nabataea also issued silver and bronze coins from Aretas III. (*c.* 87–62 B.C.) to Rabbel II. (A.D. 75–101). From S. Arabia comes a remarkable silver coinage issued by the Himyarites, beginning in the 4th century B.C., and imitated originally from Attic tetradrachms (both of the old and new style). In Mesopotamia the colonia of Carrhae deserves notice, and the city of Edessa, which issues imperial money as a colonia, and has a series of coins of its kings, striking with Roman emperors in silver and bronze. Curiously, this and the colonial issue are long contemporary. The colonial coinages of Nisibis and of Resaena, which became a colonia, close the group. Babylon was probably a mint of Alexander the Great and of many of the Seleucid kings, certainly of the usurpers Molon (222–220) and Timarchus (162 B.C.).

Arabia, Mesopotamia, Babylonia.

Africa.

The coins of Africa are far less numerous then those of the other two continents, as Greek, Phoenician and Roman civilization never penetrated beyond Egypt and the northern coast to the west. The series of Egypt is first in geographical order. As yet no coins have been here assigned of a date anterior to Alexander. The old Egyptians kept their gold, electrum and silver in rings, and weighed them to ascertain the value. During the Persian rule the Persian money must have been current, and the satrap Aryandes is said to have issued a coinage of silver under Darius I. With Alexander a regular Greek coinage must have begun, and some of his coins are of Egyptian mints. A rare bronze coin was struck at Naucratis, probably during his lifetime. With Ptolemy I. the great Ptolemaic currency begins, which lasted for three centuries. The characteristics of this coinage are its splendid series of gold pieces and the size of the bronze money. The execution of the earlier heads is good; afterwards they become coarse and careless. At first the fine pieces were issued by the Phoenician, Cyprian and other foreign mints, the Egyptian work being usually inferior. While the Seleucids were still striking good coins, the Ptolemies allowed their money to fall into barbarism in Egypt and even in Cyprus. The obverse type is a royal head, that of Ptolemy I. being the ordinary silver type (see Pl. II. fig. 22), while that of Arsinoë II. was long but not uninterruptedly continued on the gold. The head of Zeus Ammon is most usual on the bronze coinage. A type once adopted was usually retained. Thus Ptolemy I., Arsinoë II., Ptolemy IV., Cleopatra I., have a kind of commemoration in the coinage on the analogy of the priesthoods established in honour of each royal pair. The almost universal type of reverse of all metals is the Ptolemaic badge, the eagle on the thunderbolt, which, in spite of variety, is always heraldic. For art and iconography this series is far inferior to that of the Seleucids. The weight after the earlier part of the reign of Ptolemy I. (who experimented with the Attic and Rhodian standards) is Phoenician for gold and silver; the metrology of the bronze is obscure. The chief

Egypt.

coins are octadrachms in gold and tetradrachms in silver, besides the abundant bronze money. Ptolemy I. appears to have issued his money while regent for Philip Arrhidaeus (323–318); it only differs in the royal name from that of Alexander. He then struck money for Alexander IV. (317–311) on the Attic standard with the head of Alexander the Great, with the horn of Ammon in the elephant's skin and Alexander's reverse. He soon adopted a new reverse, that of Athene Promachos. This money he continued to strike after the young king's death until he himself (305) took the royal title, when he issued his own money, his portrait on the one side and the eagle and thunderbolt with his name as king on the other. This type in silver, with the inscription "Ptolemy the king," is thenceforward the regular currency. He also issued gold staters (reverse, Alexander the Great in an elephant-car). Ptolemy II. (Philadelphus, 285–247), the richest of the family, continued his father's coinage. Philadelphus also began (after the death and deification of Arsinoë II., about 271 B.C.), the issue of the gold octadrachms with the busts of Ptolemy I. and Berenice I., Ptolemy II. and Arsinoë II., and certainly struck beautiful octadrachms in gold and decadrachms in silver of Arsinoë II., the gold being long afterwards continued. Philadelphus also began the great bronze issues of the system. Ptolemy III. (Euergetes I. *c.* 247–222) struck gold octadrachms with his own portrait, wearing a crown of rays. His queen Berenice II., striking in her own right as heiress of the Cyrenaica and also as consort, issued a showy currency with her portrait, both octadrachms and decadrachms like those of Arsinoë, and a coinage for the Cyrenaica of peculiar divisions. Under Ptolemy IV. (Philopator, 222–205) the gold octadrachms are continued with his portrait and that of Arsinoë III. Ptolemy V. (Epiphanes, 205–181) still strikes octadrachms with his portrait and with that of Arsinoë, and begins the continuous series of the tetradrachms of the three great cities of Cyprus. The coinage henceforward steadily degenerates in style and eventually also in metal. In the latest series, the money of the famous Cleopatra VII., it is interesting to note the Egyptian variety of her head, also occurring on Greek imperial money and on that of Ascalon.

Under the Roman rule the imperial money of Alexandria, the coinage of the imperial province of Egypt, is the most remarkable in its class for its extent and the interest and variety of its types. It begins under Augustus and ends with the usurper or patriot Achilleus, called on his money Domitius Domitianus, overthrown by Diocletian (A.D. 297), thus lasting longer than Greek imperial money elsewhere. In the earlier period there are base silver coins continuing the base tetradrachms struck by Auletes, and bronze money of several sizes. Most of the coins are dated by the regnal years of the emperors, the letter L being used for "year." The types are very various, and may be broadly divided into Greek, Graeco-Roman and Graeco-Egyptian. The Graeco-Roman types have the closest analogy to those of Rome herself; the Graeco-Egyptian are of high interest as a special class illustrative of the latest phase of Egyptian mythology. These native types, at first uncommon, from the time of Domitian are of great frequency. The money of Trajan, Hadrian and Antoninus Pius is abundant and interesting. A coin of Antoninus, dated in his sixth year, records the beginning of a new Sothiac cycle of 1460 years, which happened in the emperor's second year (A.D. 139). The reverse type is a crested crane, the Egyptian bennu or phoenix, with a kind of radiate nimbus round its head, and the inscription ΑΙΩΝ. Under Claudius II. (Gothicus) and thenceforward there is but a single kind of coin of bronze washed with silver. In this series we note the money of Zenobia, and of her son Vabalathus.

Coins bearing the names and local types of the nomes of Egypt were struck by a few emperors at the Alexandrian mint. Their metal is bronze, and they are of different sizes.

Passing by the unimportant coinage of the Libyans, we reach the interesting series of the Cyrenaica, the only truly Greek currency of Africa. It begins under the line of Battus about the middle of the 7th century, and reaches to the Roman rule as far as the reign of Augustus. The coins were issued at Cyrene, Barca, Euesperides and smaller towns. The weight of the gold always, and of the silver until some date not long after 450 B.C., is Euboic; afterwards it is Phoenician. The ruling types are the silphium plant and its fruit, and the head of Zeus Ammon, first bearded (Pl. II. fig. 23) then beardless. The art is vigorous, and in the transitional and fine period has the best Greek qualities. It is clearly an outlying branch of the school of central Greece. The oldest coins are uninscribed, so that it cannot always be said at which mint they were struck. The money with the name of Cyrene comprises a fine series of gold Attic staters and silver tetradrachms. It was an important mint of the Ptolemies. Barca has a smaller coinage then Cyrene. It comprises a wonderful tetradrachm (Phoenician), with the head of Ammon bearded, boldly represented, absolutely full face, and three silphiums joined, between their heads an owl, a chameleon and a jerboa. The money of Euesperides is less important.

Syrtica and Byzacena offer little of interest. Their coins are late bronze, first with Punic inscriptions, then in imperial times with Latin and Punic or Latin. Latin and Greek are used in the same coins at Leptis Minor in Byzacena.

Carthage.

In Zeugitana the great currency of Carthage is the last representative of Greek money, for, despite its Orientalism, its origin is Hellenic, and of this origin it is at first not unworthy. Its range in time is from about 410 B.C., when the Carthaginians invaded Sicily, to the fall of Carthage in 146 B.C. The earliest coins are Attic tetradrachms of the class usually called Siculo-Punic. These, and certain gold coins with similar types, were issued in Sicily down to about 310 B.C. The types owe much to the coinage of Sicilian cities, especially Syracuse; but they show also distinct Punic motives, such as a lion before a palm-tree, or a head of a Punic queen. The Punic inscriptions enable some to be attributed to mints such as Motya, Solus, Eryx; others name "Carthage," "the Camp," "the Paymasters," many, inscribed *Ziz*, were issued from Panormus. The coinage from about 340 to 242 B.C., perhaps all issued at Carthage itself, is scanty; the types, head of Persephone and a horse, or horse and palm-tree, now come in, and prevail to the end of the independent coinage. The acquisition of the Spanish mines about 241 caused the issue of a large coinage, but the gold and silver soon degenerate into electrum and potin. The metrology of the various series (excepting the Siculo-Punic) is obscure, but the standard seems to be Phoenician. The late silver 12-drachm pieces and some of the bronzes are among the heaviest struck coins of the ancients. The art of the earlier coins is sometimes purely Greek of Sicilian style. There is even in the best class a curious tendency to exaggeration, which gradually develops itself and finally becomes very barbarous. Roman Carthage has a bronze coinage which is insignificant. There are a few other towns which issued money with Roman legends, such as Utica. The denarii of Clodius Macer, who revolted in A.D. 68, are curiously illustrative of his policy, which was to restore the Roman republic.

Numidia, Mauretania.

The cities of Numidia and Mauretania have a late bronze coinage; but an interesting series of silver and bronze coins is attributed with more or less certainty to the Numidian kings from Massinissa (202–148), to Juba I. (60–46 B.C.), and to the Mauretanian kings from Syphax (213–202 B.C.), to Juba II. (who also struck coins with his consort Cleopatra, daughter of Mark Antony and the famous Egyptian queen) and Ptolemy their son, the last of the great family of the kings of Egypt (A.D. 23–40).

II. Roman Coins

The Roman coinage is of two great classes,—the republican and the imperial; the first lasted from the origin of money at Rome to the reform of Augustus in 16 B.C., and the second from this date to the fall of the Western empire in A.D. 476. The evidence of the coins themselves as to the origin of the republican coinage is at variance with that of the ancient writers; but the general principles of criticism must be maintained here as in other matters of early Roman story.

The tradition which ascribed the introduction of coins bearing types to Servius Tullius must be unhesitatingly rejected. The style and types of the earliest Roman coins point clearly to a date not earlier than the middle of the 4th century. The native copper which the Italians used from primitive times as a sort of medium of exchange, in amorphous blocks (*aes rude*) was probably not a state-currency, being produced by private enterprise. It was not until Rome unified Latium and Campania under her rule that central Italy acquired a true coinage. This must have been about 338 B.C. The history of the republican

coinage from 338 to 16 B.C. falls into two great periods—the second being marked by the introduction of the denarius system in 269. From 338 to 269 three minor periods may be distinguished, indicating in a striking way the growth of the Roman organization of central Italy. In the period 338–312 Rome consolidated her dominion in Latium and Campania as against her rivals the Samnites. In the second period (312 to *c.* 290) she finally subdued the Samnites. The system of her coinage is from the beginning based on a double mint, one in Rome and one in Capua (perhaps also she struck in some other cities in south Italy). The weight-units with which she starts are, for bronze, the Osco-Latin pound of 273 grammes, for silver the didrachm of 7·58 grammes (the latter being $\frac{1}{36}$ of the former and more or less coincident with the Phocaic-Campanian didrachm current in Campania). The relation between silver and bronze was as 1 : 120 or 1 : 125. The bronze unit was the *as* of 1 pound weight, which was divided into 12 unciae. The reverse type of all bronze denominations was a prow, which alluded to the establishment of Roman sea-power (in 348 she concluded her treaty with Carthage, in 338 she subjugated Antium, her chief rival on the Latin coast, and set up the beaks of the Antiate ships in her forum). The denominations are marked by I (the as), S (semis = $\frac{1}{2}$ as) and for the smaller denominations a number of pellets indicating the value in unciae. On the obverses appear the heads of deities: Janus on the as (see Plate), Jupiter on the semis, Minerva on the triens (4 unciae), Hercules on the quadrans (3 unciae), Mercury on the sextans (2 unciae) and Bellona on the uncia. These heavy coins were all cast at Rome. The Roman mint at Capua, on the other hand, produced a series of silver coins (chiefly didrachms) and small *struck* bronze change with the inscription ROMANO (see Pl. II. fig. 24). In the second period (312 to *c.* 290) the mint at Rome continues to issue cast bronze of the same weights and types. But at Capua the mint becomes much more active, being opened for cast bronze as well as struck silver. The Osco-Latin silver standard is superseded by the Roman scruple-standard (1 scruple of 1·137 grammes = $\frac{1}{240}$ of the pound of 273 grammes). Silver being to bronze as 1 : 120, 2 scruples of silver were equivalent to 1 bronze as of 273 grammes. The first issue of silver in this period consisted of didrachms (six-scruple pieces) with a head of Roma in a Phrygian helmet (alluding to her Trojan foundation), the inscription is ROMANO. Parallel with this is a Capuan issue of libral cast bronze (*aes grave*) for the use of the Latin territory; the 3-asses (tressis), 2-asses (dupondius) and as all have the head of Roma as on the didrachm, and the reverse type of all denominations is a wheel. (This wheel probably alludes to the completion of the internal routes of communication in Roman territory, especially of the via Appia, which was finished in 312). Finally, to this first issue is attributed one of the quadrilateral ingots generally known as *aes signatum*; its types are the Roman eagle on a thunderbolt, and a Pegasus with the inscription ROMANOM. These ingots, according to a plausible but not quite convincing conjecture, were probably not used as money, but only in sacral and legal ceremonies—such as dedication to the gods, *venditio per aes et libram*, &c.—in which the use of *aes rude* was traditional. But from this time onward each issue of silver and aes grave from the Capuan mint was, it is supposed, accompanied by a new ingot of this kind. Three further issues of silver from the Capuan mint took place in this period, each accompanied by its corresponding aes grave series and ingot. These heavy bronze pieces are all uninscribed; on the silver and small struck bronze ROMA replaces ROMANO. The evidence of hoards shows that in this period there must have been some sort of convention between Rome and the autonomous mints of her allies, permitting the circulation, throughout the bronze-using district under Roman control, of all the coins issued from Rome and Capua, on the one hand, and, on the other, all the aes grave issued by the autonomous mints. In the third sub-period (*c.* 290–269) the silver coinage of the Capuan mint becomes thoroughly Romanized; its inscription is, of course, ROMA; its types are the typically Roman ones of the youthful head of Janus and Jupiter in his quadriga (these are the *nummi quadrigati*). There is also a series of struck bronze inscribed ROMA issued from the same mint. The important feature of this period is that bronze is no longer regarded as the most important element in the currency, but is subordinated to silver; the result is that we have what is called the semi-libral reduction, the weight of the as issued from the Roman mint being half the pound. But opinions vary as to whether the pound of which the as represented the half in this period was the old one of 273 grammes or the new Roman pound of 327·45 grammes. As the latter was certainly used for a special series of *aes grave* issued from the Roman mint for the Latins (see below), we may assume that it was also used for the regular Roman coinage. Now since the $\frac{1}{2}$ lb as (163·72 grammes) was equated to 1 scruple of silver (1137 grammes), we get a forced relation of silver to copper of 1 : 144. The as being regarded merely as representing so much silver (1 scruple), so long as the state guaranteed the cover, there was no reason why the as, being merely token money, should not fall in weight; and that it does, sinking by the end of this or beginning of the next period to the weight of $\frac{1}{5}$ of the Oscan or $\frac{1}{6}$ (sextans) of the new Roman pound. We may note the occurrence in this series of the *decussis* or 10-as piece. Of the two series of aes grave issued in this period for the benefit of the Latin district, both are heavier than in the preceding period; the new Roman pound of 327·45 grammes is used for a series issued from the mint of Rome; a still higher weight (perhaps of 341 grammes) for a series issued from Capua. The relation between silver and copper involved in this standard is not quite clear. In this period also we have ingots corresponding according to the theory above mentioned, to the various series of aes grave; one, with a pair of chickens feeding and a pair of rostra, refers to the augury taken by the Roman imperator before battle. Two other ingots commemorate historical events; one, with a Samnite bull on each side, the subjugation of Rome's great rival; the other, with an elephant and a pig, the alleged rout of Pyrrhus's elephants by the grunting of swine at Asculum in 278.

After the introduction in 269 B.C. of the silver denarius (piece of 10 asses, marked X, Pl. II. fig. 25) with its half (the quinarius, V) and its quarter (the sestertius, IIS), no changes of obviously great economic importance take place in the coinage until near the close of the republican period. Although it is not true, as is sometimes stated, that the coinage of silver at all local mints in south Italy, except the Bruttian, came to a close with the introduction of the denarius, yet the new Roman coin entirely dominated the currency from the first. Many mints, however, continued to issue bronze coinage down to 89 B.C., and a Roman coinage in various metals is also attributed to certain local mints, such as Croton and Hatria; not to mention the Roman issues which still continued to be made from Capua, though in a less degree than before. At Rome itself the mint was now localized in the temple of Juno Moneta, who probably received her surname from, rather than gave it to, *money*. The denarius, being equivalent to 10 asses, and weighing 4·55 grammes, would at the rate of 1 : 120 (which was now restored) be equivalent to 546 grammes of bronze. The as of the time must therefore have been the one weighing 54·6 grammes, that is $\frac{1}{5}$ of the Oscan pound of 273 grammes, or $\frac{1}{6}$ (sextans) of the Attic-Roman pound of 327·45 grammes. In other words, the legally recognized as of this period was the as of the sextantal reduction. The bronze coins of this reduction are, like the silver, struck, not cast; the process of striking had already been introduced for the lower denominations of bronze in the previous period. About 241 B.C. the weight of the denarius, having sunk under the stress of the first Punic war, was fixed at 3·90 grammes. Possibly the reduction of the as to the weight of an uncia, which Pliny attributes to the time of the Hannibalian crisis, may really have taken place at the same time. In 228 B.C. (some critics prefer to say nearly forty years earlier) a new silver extra-Roman coin, the *victoriatus*, was introduced. It replaced the old Campanian drachm and, wherever it may have been minted, was meant for circulation outside Rome. The quinarius and sestertius at the same time disappeared from the regular coinage, but

the sesterce remained the unit of account. Marks of value occur on all the coins from 269 B.C. for some time onward, except on the smallest bronze and the victoriatus. After the reduction of the bronze had been carried far, it became possible to issue large denominations of a circular form; thus circular bronze decusses (equal each to 1 denarius) are known of various periods, weighing from over 1100 to 650 grammes.

Gold was not regularly coined by the Romans until the close of the republic; but certain exceptional issues must be noticed. The earliest (some time during the first Punic War) consisted of pieces of 60 (Pl. II. fig. 26), 40 and 20 sestertii; they were issued both from Rome and from some external mint or mints. To the crisis of the second Punic War may be assigned certain electrum coins of $1\frac{1}{2}$ scruple weight (types: janiform female head, and Jupiter in quadriga). It is to this time that Pliny attributes the fixing of the as at the weight of an uncia, and the valuation of the denarius at 16 instead of 10 asses (although in estimating the pay of soldiers the denarius continued to be given for 10 asses). Finally there is some probability in the attribution to the year 209 of the well-known gold coins of 6 and 3 scruples which have on the obverse a head of the young Janus, and on the reverse two soldiers taking an oath of alliance over the carcass of a pig—in allusion to the loyalty to Rome of her Latin colonies (Livy xxvii. 9, 10).

Without following the fortunes of the various denominations, we may note that in 89 B.C. the lex Papiria suppressed all local mints throughout Italy, ordered the reissue of the silver sestertius, and introduced the semuncial ($\frac{1}{2}$ ounce) standard for bronze. This was just after the close of the Social War, which had been signalized by the issue, on the part of the revolted allies, of an interesting series of coins (denarii and—most treasonable of all—a gold piece) chiefly from Italia, as they called Corfinium. These coins bear in Oscan letters the names of the Italian military leaders, such as C. Papius Mutilus. In 81 B.C. the regular bronze coinage came to an end, and the denarius remained for a long time the only coin issued by the Roman mint. Roman generals sometimes, however, issued exceptional coins in their own names, such as "bronze sesterces."

We have already dealt with the earliest gold money of the republic. Another exceptional issue was the gold coin bearing the name of T. Quinctius Flamininus, the liberator of Hellas (struck between 198 and 190 B.C.); but it was minted in Greece and conformed to Greek standards. The earliest Roman aurei proper (those of Sulla) were also struck outside Rome. They weigh $\frac{1}{36}$ or $\frac{1}{38}$ of a Roman pound. The aurei of Pompeius were $\frac{1}{36}$, those of Julius Caesar $\frac{1}{40}$, of the pound. After Caesar's time the weight of the aureus fell to $\frac{1}{42}$ lb, under Augustus.

Of the administrative side of the Roman system of coinage little is known but what the coins reveal. The earliest indication of monetary magistrates is found in symbols, which occur on the coins before the close of the first Punic War. Then the names begin to appear, at first abbreviated, then at length. Probably the right of coinage was in the beginning vested in the consuls, but it would seem that about the time of the second Punic War it was transferred to a special board of magistrates, the *tresviri aere argento auro flando feriundo*. Whether they were appointed every year, or only when need arose, we do not know; but it is improbable that there was an annual board until the beginning of the 1st century, if then; and even when annually appointed, they cannot all have exercised their right. On the other hand, there were in some years, as 92 B.C., no less than five moneyers; in *c.* 86 B.C. there were four, two being aediles exercising a specially conferred right. Exceptional issues of this kind were often authorized by the senate, and bear inscriptions indicating the fact, such as P.E.S.C. (*Publice ex Senatus consulto*). An issue for the purpose of the Apollinarian games, defrayed out of a special treasury, bears the inscription S.C.D(e) T(hesauro). Julius Caesar added a fourth moneyer to the board. The first issue of gold by such a board took place in 43 B.C.; all previous issues of gold had been made, so far as we know, in virtue of military imperium (in 44 B.C. by the praetors). Augustus, after the troublous period 41–27 was over, returned to the triumviral system; after his reform of 15 B.C. the bronze coinage which he introduced in that year is signed by the triumvirs, although the gold and silver bears no such names. Shortly afterwards, however, he organized the system which will be dealt with under the empire.

The types of the Roman republican coins are of great interest, although their art never rises above mediocrity. The chief types of the period before 269 have already been mentioned. The earliest denarii, quinarii and sestertii bear a head of the goddess Roma, helmeted, and the Dioscuri charging on horseback, as they appeared at Lake Regillus. The victoriatus has a head of Jupiter and a figure of Victory crowning a trophy. The types of the bronze coins are practically the same as in the earlier period. About 190 B.C. the goddess Diana in her chariot begins to appear on the reverses of some of the denarii. Later, other types gradually encroach on the reverses; first, Victory in a chariot; still later such types as the Juno of Lanuvium in a chariot drawn by goats. This and other types which now begin to relieve the monotony of the series usually have a personal allusion to the moneyer, or to his family history. Thus, on a denarius of Sex. Pompeius Fostlus is seen the shepherd Faustulus discovering Romulus and Remus suckled by the she-wolf. Imaginary or more or less authentic portraits of ancestors, such as Numa, L. Junius Brutus or M. Claudius Marcellus, belong to the same category. An elephant's head on a Macedonian shield, on a coin of M. Caecilius Metellus (*c.* 94 B.C.), alludes to victories won by Caecilii at Panormus (in 251, over Punic elephants) and in Macedonia (in 148). The cult of Venus by the Julian family is illustrated by a denarius of L. Julius Caesar (*c.* 90 B.C.) with a head of Mars and a figure of Venus in a car drawn by two Cupids. The surrender of Jugurtha by Bocchus to Sulla is represented on a denarius of Sulla's son Faustus (62 B.C., Pl. II. fig. 27). The type is probably a copy of the design which we know the dictator used for his signet-ring. M. Aemilius Lepidus (TVTOR REGis) crowning Ptolemy Epiphanes, or Paullus Aemilius erecting a trophy, while King Perseus and his two children stand before him, are other historical types. A contemporary event is commemorated on a special issue inscribed AD FRV(mentum) EMV(ndum) EX S(enatus) C(onsulto), coined by L. Calpurnius Piso and Q. Servilius Caepio in 100 B.C. Caepio, quaestor in that year, defeated the proposal of Saturninus to sell corn publicly at a nominal price; but the senate voted a special issue of money to meet the strain of the market. On the obverse is a head of Saturn, from whose treasury the funds for the issue were drawn; on the reverse are Caepio and Piso on their official seat, and two ears of corn. Perhaps the most graphic allusion to a contemporary event to be found on any coin is furnished by the cap of liberty with two daggers and the inscription EID(ibus) MAR(tiis) on coins of Brutus. Representations of a less obviously historical character, as personifications of countries or places (Hispania, Alexandria) or qualities (Honos and Virtus) or mythological figures (Scylla), are all, it would seem, inspired by some personal interest. Many types will only be explained when more light is thrown on the obscure corners of Roman mythology and ritual; but they will all probably be found to have some personal reference to the moneyer. Roman types of the later republic, therefore, though they may be classified externally as "religious," "historical," "canting," &c., are all inspired by some personal motive. The inevitable outcome of this character was that, when once contemporary portraiture was regarded as legitimate on the coins, it speedily became its most important feature. The portrait of Flamininus on his gold coin struck in Greece long remained without a Roman analogy. In 44 B.C., by order of the senate, the head of Julius Caesar was placed on the silver coins (Pl. III. fig. 1; the gold coin bearing his portrait is of doubtful authenticity). After Caesar's death portraits occur on coins issued by men of all shades of political opinion, showing that portraiture on the coins was not then regarded as the monarchical prerogative, which it became from A.D. 6 onwards, when it was limited to members of the imperial family.

Augustus.

The history of the imperial coinage is full of metrological difficulties. These arise from the conditions fixed by Augustus (16–15 B.C.), by which the emperor alone coined gold and silver, the senate alone bronze. Consequently the senate was wholly at the mercy of the emperor. Augustus struck the aureus at 42 to the pound, equal to 25 denarii at 84 to the pound (Pl. III. fig. 3). He introduced a new coinage in two metals, the sestertius of 4 asses and dupondius of 2, both in fine

yellow brass (orichalcum), and the as semis and quadrans in common red copper. This distinction of metals, however, was sometimes ignored, as in the time of Nero, when we have sestertius (Pl. III. fig. 2), dupondius and as, all in brass, and of three different sizes. The as is usually nearly equal in size and weight to the dupondius, but is distinguished by its metal and inferior fabric. All this brass and copper coinage bears the letters S.C., *senatus consulto*. Emperors not acknowledged by the senate are without such money; thus we have no specimens of Otho or Pescennius Niger.

Nero reduced the denarius to $\frac{1}{96}$th of the pound, and alloyed its silver with from 5 to 10 % of base metal. Henceforward the quality of the denarius gradually sank, until under Sept. Severus the proportion of alloy was from 50 to 60 %. Caracalla also issued lead plated with silver and, among his aurei, copper plated with gold. He also introduced a new coin, called after him the argenteus Antoninianus. It was struck at $\frac{1}{50}$th to $\frac{1}{64}$th of the pound, and seems to have been originally a double denarius struck on a lower standard. The characteristic of this coin is that the head of the emperor is radiate as Sol (Pl. III. fig. 4), that of the empress on a crescent as Luna. Towards the end of Caracalla's reign the weight of the aureus had fallen to $\frac{1}{50}$ lb. Under Elagabalus the taxes were paid in gold alone; this was ruinous, for the treasury paid in debased silver at nominal value, which had to be used to purchase gold by the taxpayer at real value. Under Gordian III. the silver contained 67 % of alloy; and eventually under Gallienus the "argenteus" frequently contained no silver whatever. Aurelian (A.D. 270–275) attempted a reform of the coinage by which the previous coin was reduced from its nominal to its intrinsic value. The coins were now of bronze with a wash of silver, and we now find them marked with their value as two denarii. These coins replace at once the base silver and the bronze, which now disappear. The moneying right of the senate had become illusory by the depreciation of silver, which had ceased to have any real value. Aurelian entirely suppressed this right; Tacitus and Florian restored it for a few years, after which the S.C. disappears from the coinage. The reform of Aurelian caused a serious outbreak at Rome, but was maintained by him and by Tacitus. Aurelian also suppressed all local mints but Alexandria. It was the work of Diocletian to restore the issue of relatively pure money in the three metals. He made no less than four unsuccessful attempts to regulate the weight of gold. Not later than 290 he restored a pure silver coinage with a piece of $\frac{1}{96}$ lb. His reformed bronze coins are the *follis*, marked XX, XX·I., K, KA, &c. (all meaning "2 denarii = the unit") and the half-denarius of centenionalis.

Changes under later emperors.

Constantine, probably in A.D. 312 (though some critics attribute the reform to Constantius Chlorus) desiring to rectify the gold coinage, which had long been quite irregular in weight, reduced the chief gold piece to $\frac{1}{72}$ of the pound, and issued the solidus (Pl. III. fig. 5), a piece destined to play a great part in commercial history. It was never lowered in weight, though many centuries later it was debased, long after it had become the parent of the gold coinages of Westerns and Easterns alike throughout the civilized world. The letters OB, which are commonly found in the exergue of gold coins from the 4th century onwards mean *Obryzum* (refined gold), and the letters PS, found on silver coins *Pustulatum* (refined silver). Under Constantius II. (A.D. 360) and Julian the silver coin of $\frac{1}{96}$ lb was suppressed, and the siliqua of $\frac{1}{144}$th of the pound (which had already been issued in small quantities before) took its place. From about 360 there was a system of 4 bronze coins (follis, denarius, centenionalis and $\frac{1}{2}$ centenionalis). The last soon disappeared, and under Honorius (395) only the centenionalis remained. Honorius and his successors issued the silver decargyrus (= 10 denarii). The bronze coinage of this time was small and mean. It will be seen that a fuller system of bronze was originated by Anastasius, the Byzantine emperor.

Under Augustus the Roman monetary system became the official standard of the empire, and no local mint could exist without the imperial licence. Thus the Greek imperial money is strictly Roman money coined in the provinces, with the legends and types of the towns. Many cities were allowed to strike bronze, several silver. The kings of the Cimmerian Bosporus enjoyed the exceptional privilege of striking gold, which, however, became rapidly debased. The silver becomes limited about Nero's time, but lasts under the Antonines, and is also found under Caracalla and Macrinus. It is chiefly supplied by the mints of Caesarea in Cappadocia, Antioch and subsidiary mints in Syria, and Alexandria in Egypt. None of these were strictly city-mints, but served the purposes of the provincial government. The bronze increased in mints and quantity in the 2nd century, but, through the debasement of the Roman silver, one city after another ceased to strike about the middle of the 3rd. The provincial mint of Alexandria, however, continued to strike until the end of the century. From the coins of the ordinary Greek and other cities under the empire must be distinguished the issues of the Roman colonies. In the west these practically ceased in Nero's time; in the east they lasted as long as the other Greek coinage. Purely Roman gold and silver was coined in certain of the provinces, in Spain and Gaul, and at the cities of Antioch and Ephesus. When the base silver had driven the Greek imperial bronze out of circulation, Gallienus established local mints which struck pure Roman types. Diocletian increased the number of these mints, which lasted until the fall of the empire of the West, and in the East longer. These mints were (with others added later), Londinium (or Augusta), Camulodunum, Treviri, Lugdunum, Arelate (or Constantina), Ambianum, Tarraco, Carthago, Roma, Ostia, Ravenna, Aquileia, Mediolanum, Siscia, Serdica, Sirmium, Thessalonica, Constantinopolis, Heraclea, Nicomedia, Cyzicus, Antiochia (ultimately Theupolis) and Alexandria. A few were speedily abandoned.

As regards the internal organization of the mints under the empire, we know that, although the names of the *triumviri monetales* do not occur on the coins after 15 B.C., they continued to exist (with the title *IIIviri aere argento auro flando feriundo*, although their competence was restricted to the first metal) until probably the time of Aurelian, who withdrew the right of coinage from the senate. Officials of the imperial treasury superintended the gold and silver coinage; Trajan placed a *procurator monetae Augusti* of equestrian rank at the head of the whole system, subject to the emperor's *rationalis* (the chief official of the treasury). The system of procurators was extended and regularized by Diocletian. In the Roman colonies (which were only allowed to issue bronze) the formula D.D. or EX D.D. (*ex decurionum decreto*) often occurs, corresponding to the S.C. of the Roman mint. At many colonies, especially in the west, the monetary duumviri sign the coins. At Rome the imperial mint itself was situated behind the Colosseum, near the Caelian hill, the senate retaining its mint on the Capitol probably until the time of Trajan. The three monetae (of the three metals) appear together on medallions for the first time under Hadrian, and probably indicate the organization of the mints for the three metals in one place. From the middle of the 3rd century mint-marks begin to occur on the coins, indicating the various mints, the *officinae* in each mint, &c. Sometimes these marks form "secret combinations"; thus the letters I, O and BI found on three different coins of Diocletian (struck at three different officinae), and the letters HP, KOY and AI on three corresponding coins of Maximian, combine into Greek words representing the genitives of the Latin titles *Iovius* and *Herculius* assumed by these two emperors.

The obverse type of the imperial coins is the portrait of an imperial personage, emperor, empress or Caesar. The type only varies in the treatment of the head or bust—if male, laureate, radiate or bare; if female, sometimes veiled, but usually bare. The reverse types of the pagan period are mythological of divinities, allegorical of personifications, historical of the acts of the emperors. Thus the coins of Hadrian, besides bearing the figures of the chief divinities of Rome, commemorate by allegorical representations of countries or cities the emperor's progresses, and by actual representations his architectural works. Types often occur purely personal to the emperor, such as the sphinx which Augustus used as his signet, or the capricorn, his natal sign. The most remarkable feature of imperial types is the increase of personifications, such as Abundantia, Concordia, Liberalitas, Pudicitia—for the most part drearily conventional. The inscriptions are either simply descriptive, such as the emperor's names and titles in the nominative on the obverse, or partly on the obverse and partly on the reverse, and the name of the subject on the reverse; or else they are dedicatory, the imperial names and titles being given on the obverse in the dative and the name of the type on the reverse. Sometimes the reverse bears a directly dedicatory inscription to the emperor. The inscriptions on the earlier imperial coins from Tiberius to Severus Alexander are generally chronological, usually giving the current or last consulship of the emperor and his tribunitian year. It must be noted that Christian symbols first made their appearance on coins in an unsystematic, almost accidental way. The earliest instance is at the mint of Tarraco in A.D. 314, when a cross occurs as a symbol on the reverse. In A.D. 320 the Christian monogram is found as a detail in the field at several mints. But the types still remain pagan; these symbols are not introduced by order,

Types and inscriptions.

although the officials who introduced them doubtless knew they could do so with impunity. As times goes on the Christian emblems become more popular; on a coin of Constantius II. we find Victory crowning the emperor, who holds the standard of the cross; the inscription is HOC SIGNO VICTOR ERIS. Another type of the same reign is the Christian monogram flanked by *alpha* and *omega*. Under Julian there is a temporary recrudescence of pagan types; with the revival of Christianity monotony of type sets in.

The art of Roman imperial coins, although far inferior to that of Greek, is well worthy of study in its best ages, for its intrinsic merit, for its illustration of contemporary sculpture, and on account of the influence it exercised on medieval and modern art. On the whole the finest work is produced under Augustus, when the portraits still betray a certain refinement of imagination in the artists. Some of it reflects the beauty of Roman monumental sculpture in relief of the time, whether that sculpture be regarded as the work of Greeks or of purely Roman artists. The most vigorous portraiture is perhaps found under the Flavians. Under the Antonines, although still striking and powerful, the portraits lost in subtlety and from the time of Commodus there is a rapid decline. The age of Diocletian and Constantine shows a well-meant but hopeless attempt at revival of art. In spite of its defects, the fact that many of the greatest medallists of the Renaissance drew their inspiration from the art of imperial coins shows that it had many good qualities, of which the chief was an honest directness of effort. The realism in which this resulted is perhaps best seen in the portraits of Nero, the growth of whose bad passions may be seen in the increasing brutality of his features and expression. The medallion series is full of charming subjects, though when they have been treated by Greek artists of earlier ages the contrast is trying; the most satisfactory are the representations of older statues; the purely new compositions are either poor inventions, or have a theatrical air that removes them from the province of good art.

III. Medieval and Later Coins of Europe

The period of the medieval and later coins of Europe must be considered to begin about the time of the fall of the Western empire, so that its length to the present day is about 1400 years. It is impossible to separate the medieval and later coins, either in the entire class, because the time of change varies, or in each group, since there are usually pieces indicative of transition which display characteristics of both periods. The clearest division of the subject is to place the Byzantine coinage first, then to notice the characteristics of its descendants, and lastly to sketch the monetary history of each country. The coinage of the present day, however, having certain definite characteristics, may be dealt with separately.

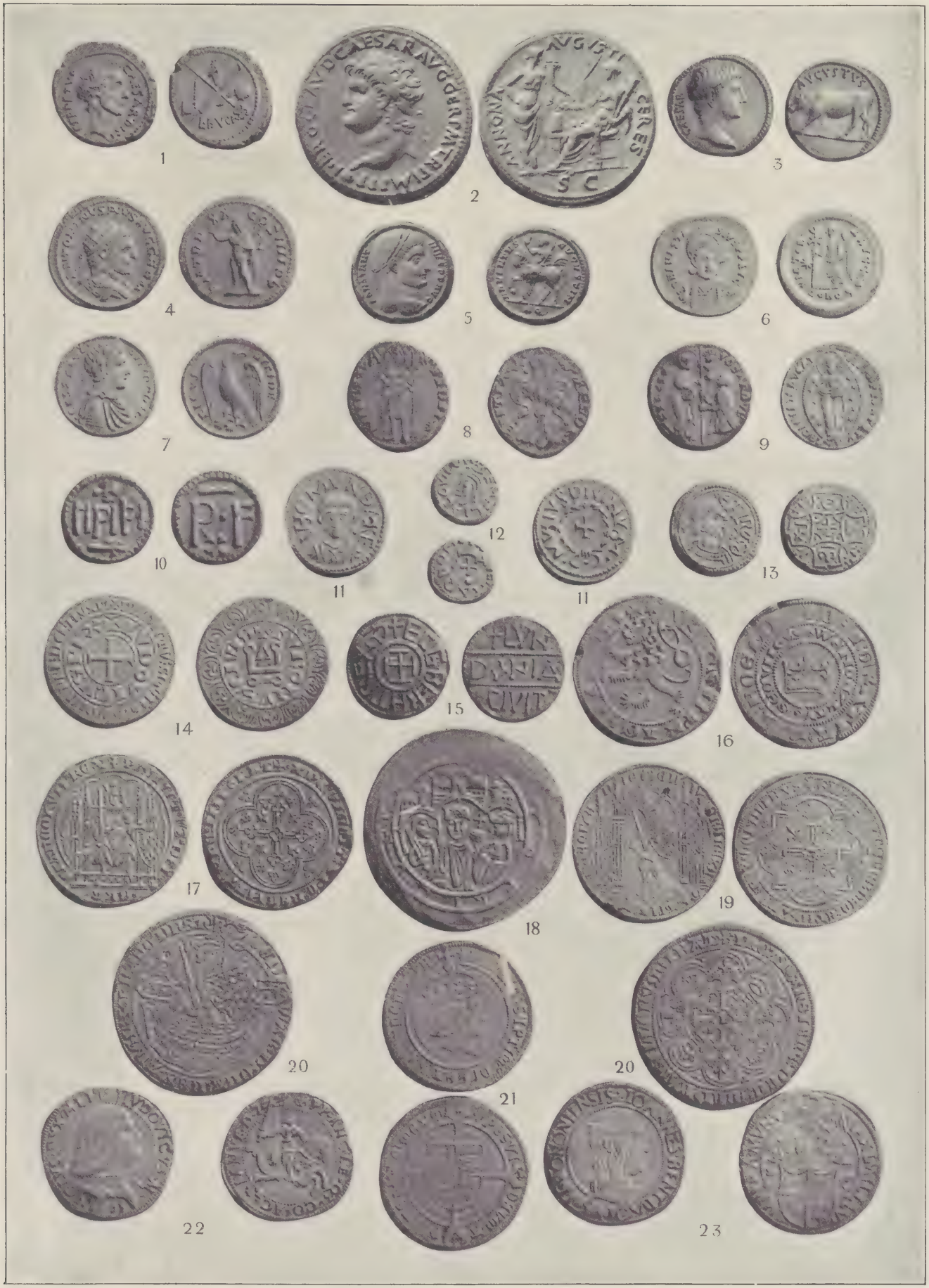
Byzantine empire.

The Byzantine money is usually held to begin in the reign of Anastasius (A.D. 491–518, Pl. III. fig. 6). The coinage is always in the three metals, but the silver money is rare, and was probably struck in small quantities. At first both the gold and the silver are fine, but towards the close of the empire they are much alloyed. The gold coin is the solidus of Constantine, with its half and its third, the so-called semissis and tremissis. The Byzantine solidus (*besant*) had an enormous vogue throughout the middle ages, being the chief gold coin until the introduction of the Italian gold in the 13th century. The chief silver coin was the miliarision, and a smaller coin, the siliqua or keration. Under Heraclius (610–641) the hexagram or double miliarision was first coined. The silver money of the restored Greek empire is obscure. In 498 Anastasius introduced a new copper coinage, bearing on the reverse, at his time, the following indexes of value as the main type: **M, K, I** and **E,** 40 nummi, 20, 10 and 5. These coins bear beneath the indexes the abbreviated name of the place of issue. Justinian I. added the regnal year in A.D. 538, his twelfth year. The money of this class presents extraordinary variations of weight, which indicate the condition of the imperial finances. The Alexandrian coins of this class begin under Anastasius and end with the capture of the city by the Arabs. They have two denominations, **IB** and **S**, and **Γ** or 12, 6 and 3 denarii, and there is an isolated variety of Justinian with **Λ Γ**(33). The Alexandrian bronze never lost its weight, while that of the empire generally fell, and thus some of the pieces of Heraclius, while associated with his sons Heraclius Constantinus and Heraclonas, have the double index **IB** and **M.** Under Basil I. the bronze money appears to have been reformed, but the absence of indexes of value makes the whole later history of the coinage in this metal very difficult. There was one curious change in the aspect of the money. Early in the 11th century the solidus begins to assume a cup-shaped form, and this subsequently became the shape of the whole coinage except the smaller bronze pieces. These novel coins are called nummi scyphati. The types, except when they refer simply to the sovereign, are of a religious and consequently of a Christian character. This feeling increases to the last. Thus, on the obverse of the earlier coins the emperors are represented alone, but from about the 10th century they are generally portrayed as aided or supported by some sacred personage or saint. On the reverses of the oldest coins we have such types as a Victory holding a cross (other personifications all but disappear), but on those of later ones a representation of Our Saviour or of the Virgin Mary. Christ first appears on a coin of about A.D. 450, where He is represented marrying Pulcheria to Marcian. He does not appear again until the end of the 7th century, when His bust is introduced by Justinian II. It was perhaps this type, so offensive to Mahommedan feeling, that caused the Caliph Abdalmalik to initiate the Mussulman coinage. From the 9th century Christ appears in various forms on the coins; about 900 we find the Virgin; a few years later saints begin to appear. A remarkable type was introduced by Michael VIII., Palaeologus, who recovered Constantinople from the Latins in 1261, and issued coins with the Virgin standing in the midst of the walls of the city. The principal inscriptions for a long period almost invariably relate to the sovereign, and express his name and titles. The secondary inscriptions of the earlier coins indicate the town at which the piece was struck, and, in the case of the larger bronze pieces, the year of the emperor's reign is also given. From about the 10th century there are generally two principal inscriptions, the one relating to the emperor and the other to the sacred figure of the reverse, in the form of a prayer. The secondary inscriptions at the same time are descriptive, and are merely abbreviations of the names or titles of the sacred personages near the representations of whom they are placed. From the time of Alexius I. (Comnenus) the principal inscriptions are almost disused, and descriptive ones alone given. These are nearly always abbreviations, like the secondary ones of the earlier period. The language of the inscriptions was at first Latin with a partial use of Greek; about the time of Heraclius Greek began to take its place on a rude class of coins, probably local; by the 9th century Greek inscriptions occur in the regular coinage; and at the time of Alexius I. Latin wholly disappears. The Greek inscriptions are remarkable for their orthography, which indicates the changes of the language. In the 11th century we notice a few metrical inscriptions, the forerunners of verse-mottoes on later coins. Of the art of these coins little need be said. It has its importance in illustrating contemporary ecclesiastical art, but is generally inferior to it both in design and in execution. It is noticeable that from the beginning of the Byzantine period the facing representation of the bust begins to be popular, and that from the time of Justinian (6th century) onwards the profile practically disappears from the coinage. The last Byzantine gold coin (a piece of John V., 1341–1391) shows a figure of John the Baptist imitated from the Florentine coinage.

Cognate groups.

Besides the regular series of the Byzantine empire, in which we include the money assigned to the Latin emperors of Constantinople, there are several cognate groups connected with it, either because of their similarity, or because the sovereigns were of the imperial houses. There are the coinages of the barbarians to be next noticed, and the money of the emperors of Nicaea, of Thessalonica and of Trebizond. The last group consists of small silver pieces, which were prized for their purity; they were called Comnenian white-money (ἄσπρα Κομνήνατα), the princes of Trebizond having sprung from the illustrious family of the Comneni.

The coinage of the other states of the West falls into well-defined periods, which have been distinguished as (1) transitional period, from Roman to true medieval coinage, from the fall



XIX. 896. ROMAN AND MEDIEVAL COINS.

NUMISMATICS

ORIENTAL COINS.

of Rome (476) to the accession of Charlemagne (768); (2) true medieval age, during which the Carolingian money was the currency of western Europe, from Charlemagne to the fall of the Swabian house (1268); (3) early Renaissance, from the striking of the florin in Florence (1252) to the classical Renaissance (1450); (4) the classical Renaissance, from 1450 to 1600; (5) the modern period.

Periods of other European coinage.

1. The various coinages of the transitional period will best be considered together (see below).

2. The inconvenience of gold money when it represents a very large value in the necessaries of life must have caused its abandonment and the substitution of silver by the Carlovingians. The denier (denarius) or penny of about 24 grains was at first practically the sole coin. The solidus in gold was struck but very rarely, perhaps as a kind of proof of the right of coining. The Byzantine solidus or bezant was used and probably the equivalent Arab gold. The Arab silver piece, the *dirhem*, was almost exactly the double of the denier, and seems to have been widely current in the north. The new coinage spread from France, where it was first royal and then royal and feudal, to Germany, Italy, where the Byzantine types did not wholly disappear, England, Scandinavia, Castile and Aragon. In Germany and France feudal money was soon issued, and in Italy towns and ecclesiastical foundations largely acquired from the empire the right of coinage, which was elsewhere rare. The consequence of the extended right of coinage was a depreciation in weight, and in the middle of the 12th century the one-sided pennies called bracteates appeared in Germany, which were so thin that they could only be stamped on one side. The types of this whole second coinage are new, except when the bust of the emperor is engraved. The most usual are the cross; and the church as a temple also appears, ultimately taking the form of a Gothic building. There are also sacred figures, and more rarely heads in the later age.

Medieval.

3. The true herald of the Renaissance was the emperor Frederick II. In restoring the gold coinage, however, he followed in the steps of the Norman dukes of Apulia. With a large Arab population, these princes had found it convenient to continue the Oriental gold money of the country, part of the great currency at that time of all the western Moslems, and Roger II. (1130–1154) also struck Latin coins of his own as DVX APVLIAE, the first ducats. Frederick II. (1215–1250), continuing the Arab coinage, also struck his own Roman gold money, solidi and half solidi, with his bust as emperor of the Romans, Caesar Augustus, and on the reverse the imperial eagle (Pl. III. fig. 7). In workmanship these were the finest coins produced in the middle ages. But the calamities which overwhelmed the Swabian house and threw back the Renaissance deprived this effort of any weight, and it was left to the great republics to carry out the idea of a worthy coinage—a necessity of their large commercial schemes. The famous gold florin was first issued in 1252 (Pl. III. fig. 8). The obverse type is the standing figure of St John the Baptist, the reverse bears the lily of Florence. The weight was about 54 grains, but the breadth of the coin and the beauty of the work gave it dignity. The commercial greatness of Florence and the purity of the florin caused the issue of similar coins in almost all parts of Europe. Venice was not long in striking (in 1284) a gold coin of the same weight as the florin, but with the types of a standing figure of Christ, and the doge receiving the gonfalon at the hands of St Mark (see Pl. III. fig. 9). It was first called the ducat, the name it always bears in its inscription; later it is known as the zecchino or sequin. Though not so largely imitated as the florin, the extreme purity of the sequin was unquestioned to a time within the memory of living persons. Genoa likewise had a great gold currency, and the other Italian states struck in this metal. It is significant of the power of the Italian republics that the later Mameluke sultans of Egypt found it convenient or necessary for their position between Europe and India to adopt the weight of the florin and sequin for their gold money. Many varieties of gold money appear in course of time in France, England and to a less extent in other countries. The need for a heavier silver coinage caused the issue of the large denier (grossus denarius, gros or groat). This coin appears early in the 14th century. The types from the 14th century onwards are very various and distinctly worthy of the art of the time, which as yet is purely decorative and conventional, so that portraits are not possible. The religious intention also is gradually giving way to the desire to produce a beautiful result, and the symbol of the cross is varied to suit the decorative needs of the coin. Heraldic subjects also appear, and in the shield, which is frequently a reverse type, we see the origin of the usual modern reverse of the most important coins.

Of early Renaissance.

4, 5. With the classical Renaissance we find ourselves in the presence of modern ideas. The elaborate systems of coinage of the various states of Europe are soon to begin, and the prevalence of a general currency to become for the time impossible. Silver money now gains new importance with the issue of the thaler or dollar in Germany, in 1518. This great coin speedily became the chief European piece in its metal, but as it was coined of various weights and varying purity it failed to acquire the general character of the denier. The style of this age is at first excellent. The medals gave the tone to the coinage. Art had wholly thrown off the rules of the age before and attained the faculty of portraiture and the power of simply representing objects of nature and art. Great masters now executed medals and even coins, but speedily this work became a mere matter of commerce, and by the beginning of the modern period it was fast falling into the poverty and barbarism in which it has ever since remained. The details of the numismatics of these two periods belong to the notices of the money of the several countries.

Of classical Renaissance, and modern.

A word must be added on money of account. While the denier was the chief and practically the sole coin, the solidus passed from use as a foreign piece into a money of account. The solidus, like the German schilling (shilling), contained usually 12 deniers. As there were 20 shillings to the pound of silver, we obtain the reckoning by £ s. d., librae, solidi and denarii. The pound as a weight contained 12 oz., and its two-thirds was the German mark of 8 oz.

Money of account.

It would be interesting, did space permit, to notice fully the art of this entire class, to examine its growth, and to trace its decline; but, as with that of Greek and Roman coins, we must mainly limit ourselves to the best period. This is a space of about a hundred and fifty years, the age of the classical Renaissance, from the middle of the 15th century to the close of the 16th. The finest works are limited to the first half-century of this period, from a little before 1450 to about 1500, in Italy, and for as long a time, beginning and ending somewhat later, in Germany. The artists were then greater than afterwards, and medal-making had not degenerated into a trade; but with the larger production of the period following the work was more mechanical, and so fell into the hands of inferior men. The medals of this first period may not unworthily be placed by the side of its sculpture and its painting. Not only have some of its medallists taken honourable places in a list where there was no room for ignoble names, but to design medals was not thought an unworthy occupation for the most famous artists. There are, as we should expect, two principal schools, the Italian and the German. The former attained a higher excellence, as possessing not merely a nobler style but one especially adapted to coins or medals. The object which the artists strove to attain was to present a portrait or to commemorate an action in the best manner possible, without losing sight of the fitness of the designs to the form and use of the piece on which they were to be placed. For the successful attainment of this purpose the style of the later pre-Raphaelites was eminently suited. Its general love of truth, symmetrical grouping, simple drapery and severely faithful portraiture were qualities especially fitted to produce a fine portrait and a good medal. It is to be noted that their idea of portraiture did not depend on such a feeling for beauty as influenced the Greeks. Rather did it set before it the moral or intellectual attainments and capabilities, what the Italians called the *virtù*, of the subject. The German art, as seen in the medals, is mostly the work of carvers in wood or honestone, or goldsmiths. It excels in vigorous, realistic portraiture, and in decorative treatment of heraldic subjects, but is lacking in breadth of style and in the imagination shown by the best Italian medallists. Both these schools, but especially the Italian, afford the best foundation for a truly excellent modern medallic art. The finest coins and medals of Italy and Germany have an object similar to that which it is sought to fulfil in the English, and their nearness in time makes many details entirely appropriate. Thus, without blindly imitating them, modern artists may derive from them the greatest aid.

Art.

There are some delicately beautiful Italian medals of the 16th century, too closely imitated from the Roman style. A vigorous realistic school, the only great one of modern times, arose in France before the close of the 16th century and lasted into the next. It was rendered illustrious by Dupré and the inferior but still powerful Warin. From this age until the time of Napoleon there is nothing worthy of note. The style of his medallists is the weak classical manner then in vogue, but yet is superior to what went before and what has followed.

It is not intended here to enter in any detail into the various divisions of the subject already treated in its main outlines. The questions that would require consideration are of too complicated and technical a nature to be illustrated within reasonable limits; the principal matters of inquiry may, however, be indicated.

We begin with a survey of the transitional coinages in the various countries of the West. They cover the period from the 5th to the 8th centuries, and are of immense historical significance. The types throughout are monotonous: the bust of a Roman emperor or local ruler, a cross of some kind, a Victory, &c. The style is quite barbarous. The classification of the earliest servile imitations of Roman and Byzantine money rests solely upon provenance and is uncertain. The following general series are distinguished: (A) The *Vandals* (in Africa, 428–534) issued gold (?), silver and bronze from Hunneric (477–484) to Gelamir (530–534); the gold is anonymous. (B) The *Suevians* (Spain, 409–585) had little but imitations of

Transitional coinages.

Byzantine gold; but Richiar (448–456) issued a denarius in his own name. (C) The *Ostrogoths* (Italy, 489–553) were preceded by the Herulian Odoacer (476–494), who coined silver and bronze; their kings (including Theodoric, 493–526, and Totila or Baduila, 541–552) issued gold, silver and bronze in their own names, from Rome, Ravenna, Milan, &c. (D) The *Lombards* (Italy, 568–774) had no coins in their own names before Grimoald, duke of Beneventum (662–671); later there are gold solidi and thirds and silver from many mints. Gold was issued for the duchy of Beneventum in the 8th century. (E) The *Burgundians* (Gaul, to 534) first issued recognizable coins under Gondebald (473–516). (F) The *Visigoths* (South Gaul and Spain) had imitative gold thirds in the 5th and 6th centuries; the kings' names appear from Leovigild (573–586) to Roderic (710–711). Sixty-one mints were in operation. (G) The *Meroving Franks* first issued under Clovis I. (481–511) coins recognizably Frankish (solidi and thirds). Royal names first appear on silver and copper under Theuderic of Austrasia (511–534) and Childebert I. of Paris (511–558). The chief Frankish inscribed coinage is, however, of gold solidi and thirds, from Theodebert I. (534–548), who broke down the Roman imperial prerogative and issued *gold with his own name in full*, to the beginning of the 8th century. The last Merovings issued no coins in their own names, being mere puppets. And from the middle of the 6th century the coins with kings' names are far less numerous than those bearing the names only of mints and moneyers; some 800 places (not only in what is now France, but in Germany, the Low Countries and Switzerland) are thus named (Pl. III. fig. 12). This coinage seems to have been intimately connected with the fiscal organization, though the generally accepted theory that the taxes collected in each place were there and then converted into money is by no means proved. Certain religious establishments also possessed the right of coining in their own name. The close of the Meroving dynasty saw a revival of silver in the *saiga*, which heralded the introduction of the denier. (H) The Anglo-Saxons began with an imitative coinage similar to the Merovingian, viz. gold, *solidi* and *thirds*, and silver *sceattas* (=treasure, Ger. *Schatz*) of about 20 grains troy, and *stycas* (=pieces, Ger. *Stück*), first of silver, then of copper. The gold is rare and confined to the south; only two *solidi* are known, imitations of Honorius, with runic legends on the reverse. The types of the gold *thirds*, as of the coinage in other metals (which does not begin until the 7th century), are derived more or less directly from Roman. Some of the inscribed sceattas bear the name of London in Roman letters; others, in runes, the names of Epa and Peada (who is perhaps the son of Penda), king of Mercia (d. 655). Sceattas with runic inscriptions were also issued in East Anglia towards the end of the 8th century. But the sceatta was superseded by the penny introduced by Offa (757–796). Offa also struck a gold coin, bearing his name and an inscription copied directly from an almost contemporary Arab coin; but this is quite an exceptional issue, represented now by a unique specimen. The styca, which begins *c.* 670, was characteristic of the Northumbrian coinage, lasting, long after the introduction of the penny farther south, down to the Danish invasions of the second half of the 9th century. A series was issued by the archbishops of York. Wigmund (837–854) struck a gold solidus inscribed MVNVS DIVINVM, copied from the solidi of Louis le Debonnaire, and evidently meant for a religious purpose (Pl. III. fig. 11). For the whole question of Anglo-Saxon coins see BRITAIN: *Anglo-Saxon*. (I) The Frisians had a small coinage of gold thirds (imitated from Byzantine), and one with the name of Audulfus also exists (end of the 6th century?). The chief mint was probably Doccum.

We now proceed to the consideration of the coinages of the various countries from the 8th century to modern times. The money of Portugal begins, after the expulsion of the Moors, with Alphonso I. (1112); it is exclusively regal, and not of great interest except as affording indications of the wealth and commercial activity of the state in the early part of the 18th century. The coinage of Spain, after the reconquest from the Moors, is almost without exception regal. The kingdom of Navarre had a coinage from the time of Sancho III. (1000–1035). The series of Castile and Leon begins with Alphonso VI. (1053) with deniers and obols. Aragon first has coins under Sancho Ramirez I. (1063). Gold (imitated from Moorish money) is introduced in the middle of the 12th century. A plentiful coinage was issued after the union of the crowns in 1479. The Spanish dollar of the 17th and 18th centuries was one of the most widely circulating currencies in the West (see Pl. V. fig. 5). The medals of Spain are not important.

Portugal. **Spain.**

In 755 Pippin abolished the gold coinage of his Merovingian predecessors and introduced the silver denier (see Pl. III. fig. 10); the coinage became a royal prerogative once more, and was confined to a few mints. The denier, which at first weighed *c.* 1·28 gramme (19¾ grains), was for centuries the most important of European silver coins. Under Charlemagne the weight was slightly raised; the Caroline monogram appears, and there are other modifications in the types. Charlemagne also issued money from various Italian, German and Spanish mints. He also introduced the obol, and struck gold (chiefly at Italian mints). Among his types must be noted the temple with the inscription XPISTIANA RELIGIO. Louis le Debonnaire (814–840) was the last Carolingian to strike gold. In the 9th century are perceptible the first traces of the movement which led to the extensive feudal coinage. The advent of the house of Capet made no great change in the system, but the feudal issues now become important. The most widespread denier was that of the abbey of St Martin at Tours (*denier tournois*); the royal coinage was known as the *monnaie parisis*. St Louis (1226–1270) effected a great reform late in his reign, making the sou (hitherto a money of account) into a real coin as the *gros* (see Pl. III. fig. 14), and introducing a gold coinage. Henceforward the coinage increases in complexity; in the 14th century it has great artistic merit (see Pl. III. fig. 17). The French medals are far more interesting than the modern coins. The earliest of artistic importance not by Italian artists show nevertheless strong Italian influence (medals of Charles VIII. and Anne of Brittany, of Philibert of Savoy and Margaret of Austria). A series of large medallions of the Valois is attributed to Germain Pilon. The most characteristically French artists are Guillaume Dupré (working 1595–1643) and Jean and Claude Warin (middle and second half of 17th century). The long historical series of Louis XIV. has no artistic value; but that of the Napoleonic period shows great technical ability on the part of artists like Andrieu, in spite of the false classicalism of their designs.

France.

The silver penny was introduced into England by Offa, king of Mercia (757–796), following the lead of Pippin in France (see Pl. III.fig.13). It soon rose in weight to about 22 grains troy (1·42 gramme), at which it long remained. The types were usually, *obverse* the king's head, or some form of cross or religious symbol; *reverse* some form of cross, religious symbol or ornament. The inscriptions gave the names of the king and of the moneyer, later also the mint. An important gold coin of Offa was imitated from an Arab *dinar* of 774, with the addition of the words OFFA REX. The Mercian coinage ends about 874. The pennies of the kings of Kent extend from 765 to 825; the archbishops of Canterbury went on striking to the beginning of the 10th century. The East Anglian regal series extends to 890; the memorial coinage of St Edmund circulated largely in East Anglia in the 9th century. The penny appears in Northumbria with the Dane Halfdan (875–877) and continues to the middle of the next century. A coinage of "St Peter" pennies was issued from York *c.* 920–940. The coinage of Wessex begins with Ecgbert, probably *c.* 825, when he got possession of the mint at Canterbury (see Pl. III. fig. 15 with the name of London). The coinage marks the gradual growth of Wessex, until England is united under Edgar (957–975). There is henceforward for a long time no change of great importance in the coinage, which continued to consist of pennies, with rare halfpennies (the pennies were usually cut into halves and quarters along the lines of the cross to make small change). During the reign of Stephen the monotony is relieved by a few issues by barons like Robert, earl of Gloucester. The number of mints is much reduced by the time of Henry III., and the moneyers cease

England.

to sign the coins in Edward I.'s reign. Henry III. made an abortive attempt to introduce a gold coinage, which was successfully established by Edward III. in 1343, with the gold florin, and in 1344 with the gold noble (see Pl. III. fig. 20). (The obverse type of the noble, the king in a ship, is generally thought to refer to the victory of Sluys in 1340.) He also introduced the silver groat (4d.) and half-groat. The English coinage, both gold and silver, was now of such high quality and reputation that it (especially the silver sterling) was largely exported and imitated, chiefly in the Low Countries. The gold coinage of Edward III. is perhaps the most successful, from an artistic point of view, in the English series. Subsequent developments of the coinage now become very complicated. Edward IV. distinguished his noble by a rose on the obverse and a sun on the reverse, and introduced a new gold coin, the angel. The Tudor period is distinguished by the splendour, variety and size of the coins; Henry VII. introduced the sovereign of 20s. (240 grains) and the shilling, and on his coins the first serious attempt at portraiture is found (see Pl. III. fig. 21). Under Henry VIII. the quality of the silver money declines, being not effectually restored until the reign of Elizabeth, when an unsuccessful attempt was made to introduce a copper coinage. Private tokens came into use, but the official copper coinage does not begin until the next reign. The use of the mill, as distinct from the hammer, was begun in 1562, but it took just a century to oust the old-fashioned method. In 1613 John, Lord Harrington, obtained a patent for the issue of copper farthings, and private tradesmen's tokens were prohibited. The gold sovereign of James I., from its inscription (FACIAM EOS IN GENTEM VNAM) and the fact that it was meant to circulate on both sides of the Border, was known as the unite. The coinage of Charles I. presents great varieties owing to the civil war. The best workmanship is seen on the milled coins issued by Nicolas Briot. But the majority of the money was still hammered. The scarcity of gold in the royal treasury during the troubles induced the king to coin twenty- and ten-shilling pieces of silver, in addition to the crowns and smaller denominations. Gold three-pound pieces, or triple-unites, however, were issued from the Oxford mint. One of the most remarkable of his pieces is a crown struck at Oxford by Rawlins. It bears on the obverse the king on horseback, with a representation of the town beneath the horse, and on the reverse the heads of the "Oxford Declaration." The so-called "Juxon medal," given by Charles to Bishop Juxon on the scaffold, is really a pattern-piece by Rawlins (see Pl. V. fig. 1). Of equal interest are the siege-pieces of many castles famous in the annals of those days. They are mostly of silver, often mere pieces of plate with a stamp; but Colchester and Pontefract issued gold. The coinage of the Commonwealth is of a plainness proper to the principles of those who sanctioned it. The great Protector, however, caused money to be designed of his own bearing his head. It is not certain that this was ever sent forth, and it is therefore put in the class of patterns. Simon, the chief of English medallists, designed the coins, which are unequalled in the whole series for the vigour of the portrait (a worthy presentment of the head of Cromwell) and the beauty and fitness of every portion of the work. The finest coin produced under Charles II., and technically the best executed piece in the whole English series, is the "Petition Crown" (see Pl. V. fig. 2), a pattern by Simon, to which, however—probably for political reasons—the work of Jan Roettier was preferred. Maundy money was first struck in this reign, and the name guinea was now applied to the 20s. piece. In 1672 a true copper coinage of halfpence and farthings was introduced. Henceforward there is a decline in the coinage, although skill is perceived in the portrait of William III., whose grand features could scarcely have failed to stimulate an artist to more than a common effort. Queen Anne's money is also worthy of note, on account of the attempt, on Dean Swift's suggestion, to commemorate current history on the copper coinage, which led to the issue of the famous farthings (see Pl. V. fig. 4). These have been the cause of an extraordinary delusion, to the effect that a very small number (some say three) of these pieces were struck, and that their value is a thousand pounds each, instead of usually some shillings. Worthless casts of genuine farthings, and counters made in imitation of the sixpence of the time, are constantly mistaken for such farthings. After this there is little to remark, except the baseness of the art of the coins under the first three Georges, until the talent of Pistrucci gave a worthier form to the currency. Between 1760 and 1816 hardly any silver or copper money was issued. The gap was filled by the use of Spanish dollars counterstamped, and silver tokens issued by the Banks of England and Ireland, as well as by vast quantities of tokens issued by private persons. In 1816 the new coinage of gold and silver was issued, since when there have been few changes in the British currency.

English Medals.

The English medals are far more interesting for their bearing on events than as works of art. The best are almost all by foreigners, but the fine pieces of the Simons form notable exceptions. The medals of the Tudors are good in style, and show some excellent portraits, in particular those by Trezzo and Stephen H. (generally known as Stephen of Holland). There is one of Mary queen of Scots by Primavera, representing her in middle life, which is perhaps her most characteristic portrait. Elizabeth's are of historical importance, and some of them, as the Armada medals (see Pl. V. fig. 7), have a certain barbaric grandeur, being probably the work of English artists. The richer series of the Stuart period contains some medals of fine style. These include works by Warin, the Simons and the Roettiers, besides the excellent coin engravers Briot and Rawlins. The numerous badges worn by adherents of various parties during the civil war and Commonwealth have a personal and historical interest. The most curious pieces are those popular issues relating to current events, such as the so-called "Popish plot," and a certain interest attaches to medals of the exiled Stuarts. From this time there are no works deserving notice except military and naval medals, the historical interest of which makes some amends for their poverty of design and execution. The English tokens form a curious class. They are of two periods: the earlier, which are almost always of copper, were issued chiefly at the middle of the 17th century and somewhat later; the later, which are mainly of copper, but also sometimes of silver, were struck during the scarcity of the royal coinage in this metal at the end of the 18th century, and during the earlier years of the 19th century. Both were chiefly coined by tradesmen and bear their names. The colonial money of England was until lately unimportant, but now (except in style) it is not unworthy of the wealth and activity of the dependencies. The "Anglo-Gallic" money struck by the English kings for their French dominions forms a peculiar class. It was begun by Henry II., who struck deniers and half-deniers for Aquitaine. Richard I. (whose name is not found on his English coinage) struck for most of the French domains, but no coins are attributed to John or Henry III. Edward I.'s coins are of billon; of Edward II. there are none. Gold was introduced before 1337, and there are fine series of gold, silver, and billon of Edward III. (see Pl. III. fig. 19) and the Black Prince. Henry, earl of Lancaster, struck silver at Bergerac (1345–1361). The succeeding kings down to Henry VI. (first reign) all issued Anglo-Gallic coins. There was a temporary revival under Henry VIII. at Tournay (1513–1519). The whole series, with the exception of the Calais coinage, is French in character.

Scotland.

The coinage of Scotland is allied to that of England, although generally ruder; but it seems to have been more influenced in the early period from England, and towards its close from France. The oldest pieces are silver pennies or sterlings, resembling the contemporary English money of the reign of David I. (1124–1153). David II. after 1357 introduced a gold coinage. In the 15th and 16th centuries there is an important coinage, both in gold and silver, not the least interesting pieces being the fine bonnet-piece of James V., and the various issues of Queen Mary, many of which bear her portrait. The indifferent execution of the coins of Mary's reign is traceable to the disturbed state of the kingdom. The Scottish coinage came to an end in 1709.

Wales.

Wales has never had a coinage of its own, properly speaking. A unique penny attributed with good reason to Howel the Good, a contemporary of Edmund (died *c.* 950), was perhaps struck at Chester. Various English kings struck coins at Welsh mints such as Rhuddlan, Pembroke.

The money of Ireland is more scanty and of less importance than that of Scotland. The pieces most worthy of notice are the silver pennies of the early Danish kings, the earliest being that of Sihtric III. (989–1029), copied from contemporary English pennies. The Anglo-Irish coinage begins in 1177, when John as lord of Ireland received the right of coinage. A copper coinage was introduced as early as the reign of Henry VI. The quality of the Irish coinage was exceedingly poor in the 16th century, especially under Elizabeth. Between 1642 and 1647 various kinds of money of necessity were issued, including the only gold Irish coin, the Inchiquin pistole. After his expulsion from England James II. issued enormous quantities of coins of necessity made of gunmetal or pewter. The latest Irish coins were the penny and halfpenny of 1822.

Ireland.

The Isle of Man had a regular copper coinage, beginning in 1709 with pence and halfpence under the Derby family, continued by James, duke of Athol (issue of 1758), and by the English sovereigns from 1786 to 1864. The badge of the island is the three-legged symbol, with the motto *Quocunque jeceris stabit.*

Isle of Man.

Belgium occupies the next place in our arrangement. Its coinage, which, except for the few mints operating under the Merovingians and Carolingians, does not begin until the 11th century, comprises many pieces struck by foreign rulers, and has little of an independent character in either the regal or the seignorial class. The most important coinages are those of the house of Burgundy and Charles V. and his son, and of the bishops of Liége. In character the coinage of Belgium approximates to the French on the one side, the German on the other. About 1400 the Burgundian school produced a remarkable series of medals representing Roman emperors, of which two (those of Constantine and Heraclius) have come down to us; these form a link between the late Roman medallion and the Italian medal of the Renaissance. The series of Holland is similar in character until the period of the revolt of the provinces. The Dutch dollars of the 16th to the 18th centuries had an immense circulation (see Pl. V. fig. 3). Among the early Dutch medallists must be mentioned Stephen H., generally without reason known as Stephen of Holland (working 1558–1572), whose portraits show great charm. The Dutch historical medals are of great interest, more especially those which were struck by the Protestants in commemoration of current events. There is also a remarkable series of bronze medallets or jettons, which form a continuous commentary on history during the 16th and early part of the 17th centuries. Both are interesting as largely illustrating not only local events but also those of the chief European states. Such are the pieces recording the raising of the siege of Leiden, likened to the destruction of Sennacherib's army, the assassination of William the Silent, and the discomfiture of the Armada, affording striking indications of the zeal, the piety and the confidence in the right which built up the great political structure of the Dutch republic. After this time the medals lose much of their interest.

Belgium and Holland.

The money of Switzerland illustrates the varying fortunes of this central state, and the gradual growth of the stronghold of European freedom. First we have the gold money of the Frankish kings, among whose mints Basel, Lausanne, St Maurice-en-Valais and Sitten (Sion) already appear. The silver deniers, which Charlemagne made the coinage of the empire, are issued by fewer mints; the dukes of Swabia began to strike at Zurich in the 10th century, and the empire granted during the 10th and to the 13th century the right of coinage to various ecclesiastical foundations, bishoprics and abbeys. Bern was allowed a mint by the emperor Frederick II. in 1218, and other towns and seigneurs subsequently gained the same right. The demi-bracteate appears about the middle of the 11th century, and about 1125 is superseded by the true bracteate, which lasts until about 1300. The 14th century witnessed the rise of the Swiss confederation, and by degrees the cantons struck their own money. These, together with the coins of some few sees and abbacies, form the bulk of Swiss money of the medieval and modern periods. The separate cantonal coinage, interrupted by the French occupation, was finally suppressed in 1848, when a uniform currency was adopted by the whole republic. The monetary systems of the cantonal and ecclesiastical mints were extremely complicated. This was partly due to the variety of coins, partly to the debasement practised by the ecclesiastical mints. Geneva had a peculiar system of her own.

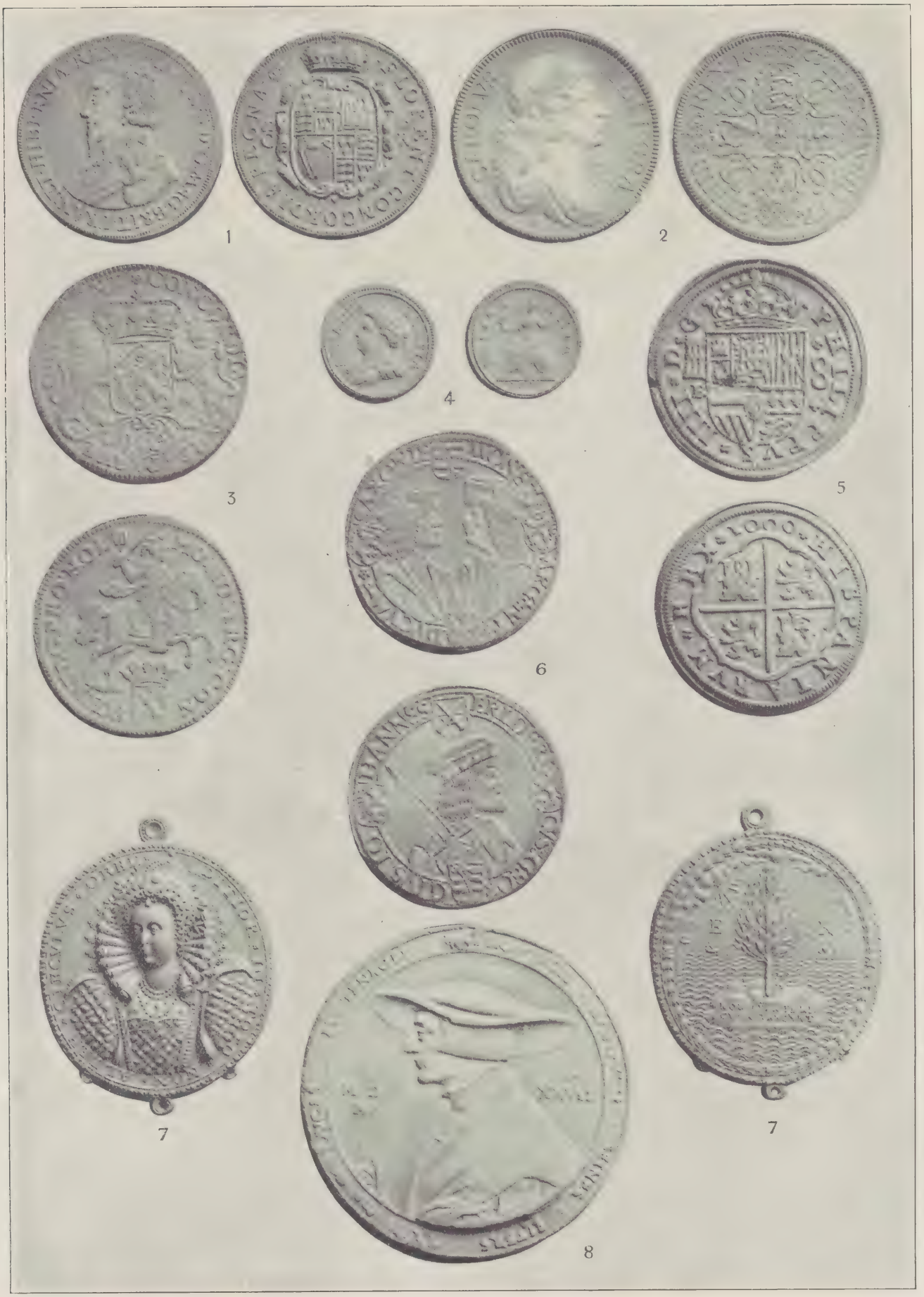
Switzerland.

Italy, with Sicily, has peculiar features. Here the barbaric coinages were mixed with the Byzantine issues which marked the recovery of the Eastern empire, and left a lasting influence in the north at Venice, and in the south at Beneventum. Later the Arab conquest left its mark in the curious Oriental coinages of the Normans of Sicily and the emperor Frederick II., mixed after his fashion with Latin coinage. The earliest money is that of the barbarians, Ostrogoths and Lombards, and local Byzantine issues in Sicily. This is followed by the deniers of Charlemagne and his successors, supplanted by the gold currencies of the Normans and Frederick II. The age of the free cities is marked by the great coinages of Florence, Venice and Genoa, while the Angevin and Aragonese princes coined in the south, and the popes began to issue a regular currency of their own at Rome. The Italian princes of the next period coined in Savoy, and at Florence, Modena, Mantua and other cities, while Rome and the foreign rulers of the south continued their mintages, Venice and Genoa of the republics alone surviving. The Italian monetary systems have already been touched on in the introductory notice. For art the series is invaluable. First in Italy the revival influenced the coins, and in them every step of advance found its record. The Italian medals are without rivals in the works of modern times.

Modern Italy and Sicily.

Following the geographical order which is best suited to the Italian coinage, we first notice the money of Savoy, which is inferior in art to that of the rest of the country. It begins with Umberto II. (1080); in 1720 the dukes became kings of Sardinia, and their coinage merged eventually in 1861 in that of the kingdom of Italy. Genoa is the first of the great republics. She obtained the right of coinage from Conrad II. in 1139, and struck gold coins from the time of the general origin of civic coinage in that metal; these are ducats and their divisions, and after a time their multiples also. In the 17th century there are very large silver pieces. In the money of Mantua there are fine coins of Gianfrancesco III. (1484–1519) and Vincenzo II. (1627–1628), these last splendid examples of the late Renaissance, large pieces of gold and silver; the portrait is fine, and the hound on the reverse a powerful design. The vicissitudes of the story of Milan find their record in no less than ten groups of money—Lombard regal coins, Carolingian deniers, money of the republic (1260–1310), next of the Visconti family (1329–1447), succeeded by the republic (1447–1450) and by the Sforza line, next of Louis XII. and Francis I. of France, of the restored Sforza, of Charles V. by Spanish right and his successors of Spain, and lastly of Austria. There are extremely fine coins of the 15th century, showing great beauty in their portraits (see Pl. III. fig. 22). The money of Florence is disappointing in its art. The Athens of the middle ages had the same reason as her prototype to preserve as faithfully as might be the types and aspect of her most famous coin, the gold florin (see Pl. III. fig. 8), and thus those who expect to see in this series the story of Italian art will be much disappointed. The silver florin was first struck in 1189. It is heavier than the denier, weighing about 27 grains, and bears the lily of Florence and the bust of St John the Baptist. These are thenceforward the leading types, the flower never changing, but the representation of the saint being varied. On the gold florin, first issued in 1252, the Baptist is represented standing, while in the contemporary silver florins he is seated. In the 14th century the arms of a moneyer appear in the field, two such officers have had the right of striking yearly, each for six months. The coins of the duchy from 1532, in spite of their new types, are not a fine series; the best are those of Alessandro, designed by Cellini.

Venice as a mint even surpasses Florence in conservatism, and, the early style being distinctly Byzantine, this is the more striking in a great artistic city. We find Venice as an imperial mint issuing Carolingian deniers, but the doges begin to coin, placing their own names on their currency, in the 12th century.



XIX. 900. MODERN COINS AND MEDALS.

ITALIAN MEDALS

The most famous silver coin, the matapan, was first struck in the brilliant time of Enrico Dandolo (1192–1205). This coin is a grossus weighing about 33 grains, with on the obverse St Mark giving the standard or gonfalon to the doge, both figures standing, and on the reverse the seated figure of the Saviour. The famous Venetian zecchino or sequin (see Pl. III. fig. 9), the rival of the florin of Florence, appears to have been first issued under Giovanni Dandolo (1284). On the obverse St Mark gives the gonfalon to the kneeling doge, and on the reverse is a standing figure of the Saviour within an oval nimbus. Niccolo Trono (1471–1473) introduces his portrait on most of his coins, but this custom is not continued. By the latest part of the 15th century large silver coins appear. The archaic style changes in the beginning of the 16th century, but there is no later movement. The large silver pieces increase in size, and large gold is also struck; the last doge, Ludovico Manin (1788–1797), issued the 100-sequin piece in gold, a monstrous coin, worth over £40. The doges of Venice from 1521 to 1797 issued a peculiar silver token or medallet, the osella, five of which they annually presented to every member of the Great Council. They replaced the wild ducks (*uccelle*) which it had been customary to present at Christmas. Two dogaressas struck similar medallets. Their types are usually allegorical; some are commemorative.

The series of the coins of Rome is rather of historical than of artistic merit. The popes begin to strike money with Adrian I. (A.D. 772–795), whose deniers are in a Byzantino-Lombard style. The coins of his successors, with few exceptions, down to Leo IX. (1049) associate the names of pope and emperor. From Leo IX. to Urban V. (1362) there is no papal coinage at Rome. The Roman senate strikes from 1188 onwards. We then see on the silver the style of the senate and Roman people, and ROMA CAPUT MUNDI. Some coins have the figures of St Paul and St Peter, others Rome seated and a lion. Charles of Anjou, king of Sicily (1263–1285), strikes as a senator, and Cola di Rienzo (1347–1348) as tribune. The gold ducat of about 1300 imitates the types of the Venetian sequin. St Peter here gives the gonfalon to a kneeling senator. The arms of the moneying senator next appear in the field. The papal coinage is resumed at Avignon; and Urban V., on his return to Rome, takes the sole right of the mint. From Martin V. (1417) to Pius IX. there is a continuous papal coinage. The later coins, though they have an interest from their bearing on the history of art, are disappointing in style. There is indeed a silver coin of Julius II. struck at Bologna and attributed to Francia, with a very fine portrait. We have beautiful gold coins of Giovanni Bentivoglio (see Pl. III. fig. 23), lord of Bologna, who employed Francia at his mint, and we know that the artist remained at his post after Julius II. had taken the city. There are also pieces of Clement VII. by Cellini, vigorous in design but careless in execution. There were papal mints at Ancona, Bologna, Piacenza, Parma, Ferrara and other Italian towns; and coins were also struck at Avignon from 1342 to 1700. The papal portraits are highly characteristic and interesting. It is, however, in the fine series of papal medals that we find a worthier artistic record.

Papal Coins.

The coinage of Sicily, afterwards that of the Two Sicilies, or Naples and Sicily, begins with the Normans. Theirs is a curiously mixed series. It begins with Robert Guiscard as duke of Apulia (1075) and Roger I. of Sicily (1072). The gold money is almost wholly Arabic, though Roger II. struck the Latin ducat, the earliest of its class; the silver is Arabic, except the great Latin scyphati of Roger II. with Roger III.; the copper is both Latin and Arabic. The gold series (*Augustales*) of the emperor Frederick II. (1198–1250) shows the first sentiment of reviving classical art, its work being far in advance of the age. These are Latin coins; he also struck small Arabic pieces in gold. Under Conrad and Manfred there is an insignificant coinage, copper only, but with Charles I. of Anjou (1266–1285) the gold money in purely medieval style is very beautiful, quite equal to that of his brother, St Louis of France. After this time there is a great issue of *gigliati*, silver coins with, for reverse, a cross fleurdelisée cantoned with fleurs-de-lis. These coins acquired a great reputation in the Levant, and were even struck by the emirs of Asia Minor. With Alphonso, the founder of the Aragonese line, we note the old style of the coins, which are in singular contrast to his fine medals. Good portraiture begins on the money of Ferdinand I., his successor. The later coinage is interesting only for its illustration of the varying fortunes of the Two Sicilies. The curious early gold coinage of the Lombard dukes of Beneventum, which follows the Byzantine type, has been mentioned under the transitional series; the dukes and princes of Beneventum and the princes of Salerno continued to issue coins (sometimes gold, usually deniers) down to the middle of the 11th century.

Sicily.

Italian medals (Pl. VI.) are next in merit to the works of the Greek die-engravers. Certain small pieces of a medallic character were made in Italy, at Padua, as early as the end of the 14th century, and there existed also large cast and chased pieces representing various Roman emperors (perhaps Burgundian work of the 14th century), which influenced the beginnings of the true medal. This began, and also reached its highest excellence, with Vittore Pisano (Pisanello), the Veronese painter, whose medals date from 1438 (or earlier) to 1449. The finest work of Italian medallists is seen in the cast medals of the 15th and early 16th century; with the increase of classicism in the 16th the style declines rapidly. The earlier medals are independent works, marked by simple vigorous truthfulness. The designs are skilful and the portraits strongly characteristic; the expression of character and *virtù* takes precedence over ideal beauty, especially in the work of the Florentine school. As the art became popular the execution of medals passed into the hands of inferior artists, and by degrees striking became usual for the smaller pieces; at the same time, a slavish imitation of the classical style weakened or destroyed originality and stamped the works with the feebleness of copies. The great medallists of the first age are Pisano, Matteo de' Pasti, Enzola, Boldù, Sperandio, Guazzalotti, Bertoldo, Gambello, Niccolò Fiorentino, Lysippus, Candida, Caradosso. Some of the most beautiful medals, however, are by unknown artists (Pl. VI. fig. 2). In the 16th century must be mentioned Pomedello, Benvenuto Cellini, Leone Leoni, Giovanni Cavino "the Paduan," Pastorino of Siena, Giacomo da Trezzo, Pietro Paolo Galeotto, called Romano, and Antonio Abondio. Incomparably the finest of all Italian medals are the works of Pisano, particularly the medals of Alphonso the Magnanimous, with the reverses of the boar-hunt and the eagle and lesser birds of prey, those of Sigismondo Malatesta, his brother surnamed Novello (see Pl. VI. fig. 1), Leonello d'Este, John VIII. (Palaeologus), Nicolò Piccinino, Inigo d'Avalos (marquis of Pescara), Ludovico and Cecilia Gonzaga of the same family, the great humanists Vittorino da Feltre and Pier Candido Decembrio. Pisano is great in portraiture, great in composition and design, and marvellously skilful in depicting animals. He alone represents the moral qualities of his subject in their highest expression and even capability. That he has high ideal power is seen at once if we compare with his portrait Pasti's inferior though powerful head of Sigismondo Malatesta. Pasti's medal of Isotta, wife of Sigismondo, is also noteworthy, likewise the medal by the otherwise unknown Constantius of Mahomet II., the conqueror of Constantinople—interesting works, but lacking Pisano's technical skill and inspiration. An artist of great power is Sperandio of Mantua; but his productions lack the finish necessary to good medallic work, his drawing and composition are careless, and his realism too often becomes brutal or vulgar. The work of Niccolò Fiorentino and of his pupils is astonishingly vigorous in portraiture, but they lack the power of designing reverses (see Pl. VI. fig. 3). In the later age Cavino executed a remarkable series of imitations of Roman sestertii, which have been frequently mistaken for originals. In art these Italian works frequently surpass the originals in spite of a degree of weakness inseparable from copies. A comparison of the Italian with the Roman pieces is thus most instructive. The works of Pastorino of Siena (who had an extraordinary facility in graceful portraiture) are especially charming (see Pl. VI. fig. 4). Historically the Italian

Italian Medals.

medals supply the defects of the coinages of Florence and Rome, and in a less degree of Venice. The papal series is invaluable as a continuous chronicle, although artistically, after the earliest period, it is monotonous.

Germany.

The money of Germany is, like that of Italy, far too various for it to be possible here to do more than sketch some of its main features. In the Frankish period mints were in operation at cities in the west, such as Mainz, Strassburg, Spires, Treves, Worms, Cologne. Pippin issued denarii from Strassburg and Mainz; under his successors denarii and obols were also coined at other mints, as Bonn, Cologne, Spires, Treves. After the reign of Louis the Child (910–911) the Carolingian system was continued until the advent of the Swabians with Conrad III. (1138–1152). In the succeeding period, which ends with the introduction of the grossus and the gold coinage under Louis of Bavaria (1314–1347), the uniformity of the currency disappears. In the west (in Lotharingia, including the southern Low Countries, the Moselle and Rhine-lands, in Frisia, Bavaria, parts of Franconia and Swabia) the denier continues; but elsewhere we find the bracteate. The right of coinage is acquired in an increasing measure by the feudatories of the empire. These local coinages entirely dominated the system, so that even the imperial coinage is not uniform, but consists of denarii in the west and bracteates in the east. The earliest imperial bracteate is of Frederick I.; the large fine bracteates last but a short time, reaching their acme about the end of the 12th century (see Pl. III. fig. 18). The fine pieces of the bishops of Halberstadt and the abbesses of Quedlinburg are characteristic of this class. With the introduction of the regular gold coinage (chiefly florins) and the grossus in the 14th century, Germany enters on the modern period. From the 16th century the thaler (so called from Joachimsthal in Bohemia, where the counts of Schlick first struck the coin in 1518) dominates the silver currency (see Pl. V. fig. 6). The thalers and other large coins of the 16th and 17th centuries are often good and always vigorous in workmanship. By the convention of 1857 the thaler was recognized as the unit for Berlin and the north, the florin of 100 kreuzers for Austria, the florin of 60 kr. for the south. The present system, based on the gold reichsmark of 100 pfennigs, was established all over the German empire in 1876. Of particular currencies in Germany we must be content with the bare mention of some of the more important. Among the great rulers we note the dukes of Bavaria, who coined from Henry I. (948–955), and issued fine thalers in the 16th century. The Counts Palatine of the Rhine coined from 1294, their mints being at Heidelberg, Frankfort, &c. The Saxon coinage begins with Duke Bernard (973) and includes a large series of bracteates and thalers, the latter being especially famous. The Brunswick coinage begins in the 11th century; besides its bracteates we note the large mining-thalers of the 16th and 17th centuries (up to ten-thaler pieces). There are good bracteates and thalers of the margraves of Brandenburg; from 1701 they coin as kings of Prussia. In Austria there is a ducal coinage from the 12th century; the gold florin of Florentine character appears under Albert II. (1330–1358). The marriage-coin of Maximilian and Maria of Burgundy (a 16th-century reproduction of a medal made by the Italian Candida in 1479) is a striking piece, and in the 16th century there is a large series of fine thalers. The thalers of Maria Theresa had an enormous circulation among savage races, and those of the date 1780 were recoined for the purposes of the Abyssinian War of 1867. In Bohemia there is a ducal coinage from the early 10th century to 1192; then came the regal bracteates. Wenceslas II. (1278–1305) struck the first German grossus at Prague (see Pl. III. fig. 16). The gold florin appears under John of Luxemburg (1310–1347). In Hungary the regal coinage begins with St Stephen (1000). Charles I. of Anjou (1310–1342) introduced the florin and grossus. Of historical interest is the money of John Hunyady as regent (1441–1452). The abundance of gold about this time and later shows the metallic wealth of the land. The same is true of the rich gold coinage of the Transylvanian princes in the 16th and 17th centuries. Of ecclesiastical coinages the most important are at Münster, Cologne, Mainz, Treves, Augsburg, Magdeburg, Spires, Würzburg, Salzburg. The Cologne series of coins is almost continuous from the Frankish period; the archbishops first received the right from Otto I., Bruno (953–965) being the first to coin; from Pilgrim (1021–1036) the series, issued at various mints in the Rhineland, is very complete down to 1802. The series of Treves ranges from Theodoric I. (965–975) to Clement Wenceslas (1794). The archiepiscopal coinage of Mainz begins with Willigis (975) and lasts until 1802; its mints included Erfurt, Bingen and many other places. The Salzburg series (beginning 996) is remarkable for its fine thalers (especially of Mathias Lang, 1519–1540). The patriarchs of Aquileia, who may be mentioned here, acquired the right of coinage from Louis II. in the 9th century, but the first who can be identified on the coins is Godfrey (1184); thence onwards there is an interesting series of denarii and smaller coins down to the early 15th century. Of cities with large coinages it is sufficient to mention Aix-la-Chapelle (from the time of Frederick I. to 1795), Frankfort-on-the-Main, Hamburg (with great gold pieces of the 16th and 17th centuries, up to 10 ducats) and Nuremberg. Lastly, we may mention the coins of the grand-masters of the Teutonic Order, issued in Prussia from 1351 to 1512.

German medals perhaps rank next to Italian, although they lack the higher artistic qualities. They are the work of craftsmen —jewellers, wood-carvers, workers in hone-stone— and show great facility of minute workmanship and chasing and decorative design (the last is especially clear in the heraldic reverses); the faults of these qualities are to some extent redeemed by the native German vigour and directness of the portraiture. The original models from which the medals were cast were in many cases made in hone-stone or box-wood, which did not, like the favourite wax of the Italian artists, give much scope for subtlety. The chief centres of the art were Nuremberg and Augsburg. Many medals have been attributed to Albrecht Dürer; whether he did more than design them is uncertain. Among other medallists may be mentioned Hans Schwarz (working 1516–1527), Ludwig Krug, Friedrich Hagenauer (working 1525–1546, see Pl. V. fig. 8), Peter Flötner (*c.* 1538, although it is doubtful whether this artist, whose plaquettes are famous, made any of the portrait-medals ascribed to him), Mattes Gebel, Hans Reinhardt the Elder, &c. Some other good artists are known only by their initials, or quite unidentified. After the middle of the 16th century the art declines, although we still have skilful artists like Valentin Maler (1568–1593). In this later period striking gradually supersedes casting.

Poland.

The earliest Polish coins are of the 10th century; the types are copied from English, German and Byzantine sources. In the 12th and 13th centuries there is a bracteate coinage. The grossus was introduced about 1300. In later times the town of Danzig, while belonging to the kingdom, issued remarkable gold pieces, thalers, &c., down to its restoration to Prussia (1793).

Scandinavia.

The origin of the coinage of the Scandinavian states: Norway, Denmark and Sweden, is clearly English and due to the Danish conquest of England. The runic alphabet is employed, though not by any means exclusively, on many of the early coins of Denmark and Norway. The Norwegian series begins with Hakon Jarl (989–996), who copies the pennies of Æthelred II. In the second half of the 11th century begins a coinage of small, thin pennies, which develop into bracteates. Magnus IV. (1263–1280) restores the coinage, more or less imitating the English sterlings of the time. Norway and Denmark were united under Eric of Pomerania in 1396. The money of Denmark begins with pennies of Sweyn (985–1014) which are copied from the coinage of Æthelred II.; the coins of Canute the Great (1014–1035) and Hardicanute (1036–1042) are mainly English in character. With Magnus (1042–1047) other influences, especially Byzantine, appear, and the latter is very strong under Sweyn Æstrithson (1047–1076). Bracteates come in in the second half of the 12th century. The coinage is very difficult of classification until the time of Eric of Pomerania (1396). There are important episcopal coinages at Roskilde and Lund in the 12th and 13th centuries. Sweden has very few early coins, beginning with imitations by Olaf Skötkonung (995) of English pennies and showing the usual bracteate coinage. The money was restored by Albert of Mecklenburg (1363–1387). The thaler is introduced by Sten Sture the younger (1512–1520). The money of Gustavus Adolphus is historically interesting. Under Charles XII. there is highly curious money of necessity. The daler is struck as a small copper coin, sometimes plated. The types include

the Roman divinities. At the same time and later there was a large issue of enormous plates of copper, stamped with their full value in silver money as a countermark.

Russia. The earliest Russian coinage begins with the princes of Kiev as early as the end of the 10th century; it shows strong Byzantine influence. The grand princes from the early 15th century struck curious little silver pieces. The coinage was modernized by Peter the Great, who introduced a regular gold coinage. The large silver and copper coins of his successors are very plentiful. Nicholas I. (1825–1855) introduced a platinum coinage of about two-fifths the value of gold.

Balkan States. The Christian coinages of the northern Balkan States are of great interest. They are chiefly silver grossi, showing a mixture of Byzantine and Venetian influences. The Bulgarians had a regular silver coinage from Asien I. (1186–1196) to John Sismana (1371–1395). The Servian coinage lasts from Vladislas I. (1234–1240) to the middle of the 15th century. There is also a coinage of the Bans of Bosnia (late 13th to 15th century). The modern coinage of the Balkan States is of interest only as a revival. The independent city of Ragusa is remarkable for the bold style of its early copper (13th century, inspired by Roman models of the 4th century) and the richness and variety of its later issues.

Latin East. There is a most interesting class of coins struck during the middle ages within the limits of the present Turkish empire, the money of the crusaders and other Latin princes of the East. The multitude of states thus designated have been classed by Schlumberger, the authority on the subject, in the following order, the chief divisions of which are here given: First group, principalities of Syria and Palestine, counts of Edessa, princes of Antioch, kings of Jerusalem, counts of Tripoli, fiefs of Jerusalem, crusaders who struck imitations of Arab coins, kings of Cyprus, lords of Rhodes, grand-masters of the order of St John at Rhodes, to which may be added the later grand-masters at Malta; second group, Latin emperors of Constantinople, Frankish princes and lords of Greece and the Archipelago whose power was due to the crusade of 1204, such as the princes of Achaia, the dukes of Athens, Neapolitan kings who struck money for their Eastern possessions, Latin lords of the Archipelago, the Genoese at Chios, the Gattilusi at Mytilene, the Genoese colonies, the Venetian colonies, the Turkoman emirs of western Asia Minor who struck Latin coins. The most important currencies are the billon and copper of the princes of Antioch (Bohemund I., 1098, to Bohemund IV., 1201–1232) and the kings of Jerusalem (Baldwin II., 1118, to Conrad, 1243), the silver and copper of the counts of Tripoli (12th and 13th centuries) and the gold imitations of Arab dīnārs, the currency in that metal of the crusaders of Palestine. These *Bisantii Sarracenati*, or Saracen bezants, are at first imitations of Fatimite dīnārs, known to have been struck by Venetian moneyers at Acre, and probably at Tyre and Tripoli also. After these coins had been current for nearly a century and a half they were forbidden on account of their Mahommedan aspect by Pope Innocent IV. The Venetians then issued gold and silver coins with the same aspect but with Christian inscriptions. The kings of Cyprus issued a really good coinage in the three metals and in billon from Guy de Lusignan (1192) to Catherina Cornaro; from 1489 to 1571 the Venetians issued coins for the island. The coinage of the order of St John begins on the conquest of the island of Rhodes (1309) and the suppression of the Templars; the earliest coins known are of Foulques de Villaret (1305–1319), and the last of the Rhodian series are of Villiers de l'Isle-Adam, the gallant defender of the island who was forced to capitulate to the Turks and sail for a new home in 1522. The coinage is of fine gold, silver, billon and copper. On the establishment of the order at Malta in 1530 it is resumed there till the capture of the island by the French at the close of the 18th century; it has little interest except as showing the wealth of the order. The other currencies of the crusaders, notwithstanding their great historical interest, are far less remarkable numismatically; the influence of the *denier tournois* is, however, noticeable on the coinage of the princes of Achaia (1245–1364), and the dukes of Athens (1225–1308).

Of the money of America little need be said here. Neither the coinages of the Spanish and Portuguese dependencies, and of the states which succeeded them, nor those of the English colonies and of the United States, present much that is worthy of note. In style they all resemble those of the parent countries, but, originating in the decline of art, they are inferior in style and work. They are most remarkable in the south for the abundance of gold and silver. The chief coin is the dollar. Some coins are of historical interest, and there are a few rarities, such as the colonial money of Lord Baltimore struck for Maryland, the pine-tree coins of Massachusetts, and the hog-money of Bermuda.

IV.—Oriental Coins

Oriental coins may be best classed as ancient Persian, Arab, modern Persian and Afghan, Indian and Chinese, and other issues of the far East. The first place is held by the money of the old Persian empire, the Parthians and the Sassanians. The conquests of the Arabs introduce a new currency, carried on by the Moslem inheritors of their empire. The modern Persian and Afghan money, though of Arab origin, is distinguished by the use of the Persian language with Arabic. The Indian currencies, though Greek, Sanskrit, Arab and Persian in their inscriptions, must be grouped together on account of their mutual dependence. They rise with the Bactrian kings, whose Greek types are gradually debased by the Indo-Scythians and Guptas; these are followed by a group of currencies with Sanskrit legends; next follow the money of Arab conquerors and the great series of the Pathans of Delhi and subsidiary dynasties, with Arabic inscriptions; the main series is continued in the currency of the Moguls, who largely use Persian, and the last series is closed by local currencies mainly with Sanskrit or Arabic legends. The Chinese coinages form the source and centre of the group of the far East, which, however, includes certain exceptional issues. The order throughout is historical, each empire or kingdom being followed by the smaller states into which it broke up, and then by the larger ones which were formed by the union of these fragments.

The Persian coinage was probably originated by Darius I. about the time that he organized the empire in satrapies. The regular taxation thus introduced made a uniform coinage necessary. Avoiding the complex gold system of Croesus, which was intended to accommodate the Greek cities in commercial relation with Lydia, Darius chose two weights, the gold shekel of 8·4 grammes and the silver drachm of 5·58 grammes. One gold piece was equal to twenty silver. The gold coin was called the daric, the silver the siglos. The metal was very pure, especially that of the daric. Thus not only were the Lydian gold and silver coins of inferior weight thrown out of circulation, but the Persian gold, from its purity, became dominant, and was the chief gold currency of the ancient world so long as the empire lasted. The issuing of gold was a royal prerogative. Silver money was coined not only by the king but in the provinces by satraps, who used local types, and by tributary states. The following classes must be distinguished: (1) regal, (2) satrapal, (3) of tributary states. The art of Persian coins varies according to the locality, from the beautiful purely Greek work of the west coast of Asia Minor to the more formal style of Cilicia and the thoroughly hieratic stiffness of Phoenicia and Persia.

The regal coinage is of darics (Pl. IV. fig. 2) and subdivisions in gold and of sigli and subdivisions in silver. The obverse type is the king as an archer, the reverse an irregular oblong incuse. The darics show differences of style, and must extend through the whole period of the empire. The sigli no doubt run parallel with them. Both these denominations are uninscribed.

The satrapal coinage is very important and interesting. It belongs mainly to Cilicia. The most remarkable series is that with a bearded head wearing a tiara, with various reverses, struck apparently at Colophon, Cyzicus and Lampsacus, and in one instance bearing the name of the satrap Pharnabazus, but usually the word "king" in Greek. The coin of Colophon shows a splendid portrait, one of the finest instances of Ionian work. It probably represents Pharnabazus (see Pl. IV. fig. 1). Of other satrapal issues those of Datames, of Tiribazus and Cilician issues, struck at Tarsus, are specially noteworthy. Their inscriptions are Aramaic.

The coinages of the tributary states have been in part noticed in their geographical order.

After the fall of the empire, the generals and satraps such as Mazaeus who governed Alexander's newly-acquired dominions issued coins from various mints, especially Babylon. The gold coins were double darics of the same types as their single predecessors. The silver coins were mainly modelled on the coins which Mazaeus had previously issued in Cilicia with the types of Baal-Taro and Lion. Some of them may have been issued as far East as Bactria and North West India. These are followed by the first native coinage, inscribed below under India.

The conquest of Alexander did not wholly destroy the independence of Persia. Within less than a century the warlike Parthians, once subjects of Persia, revolted (249–248 B.C.) against the Seleucids and formed a kingdom which speedily became an empire, ultimately the one successful rival of Rome. Their money is Greek in standard and inscriptions, as well as in the origin of types. The coins are silver, following the Attic weight, the chief piece being the drachm, though the tetradrachm is not infrequent; there are also bronze coins, but none in gold are known. The drachm has the head of the king on the obverse, diademed or with a regal head-dress, and on the reverse the founder Arsaces seated, holding a strung bow, the later tetradrachms varying this uniformity. Every king is styled Arsaces, to which many of the later sovereigns add their proper names. The inscriptions are usually long, reaching a climax in such as ΒΑΣΙΛΕΩΣ ΒΑΣΙΛΕΩΝ ΜΕΓΑΛΟΥ ΑΡΣΑΚΟΥ ΔΙΚΑΙΟΥ ΕΠΙΦΑΝΟΥΣ ΘΕΟΥ ΕΥΠΑΤΟΡΟΣ ΦΙΛΕΛΛΗΝΟΣ of Mithradates III. (57–54 B.C.; see Pl. IV. fig. 4), where we see the double influence of Persian and Seleucid styles and the desire to conciliate the Greek cities. Very noticeable are the coins which bear the portraits of Phraataces (3 B.C.-A.D. 4) and his mother, the Italian slave Musa, with the title queen (ΘΕΑΣ ΟΥΡΑΝΙΑΣ ΜΟΥΣΗΣ ΒΑΣΙΛΙΣΣΗΣ). The last of the Parthian coins are those attributed to Artavasdes (*c.* A.D. 227).

Parthians.

The coinage of Persis, beginning in the second half of the 3rd century B.C., consists of silver tetradrachms and drachms; the earliest have fine portraits of the kings, but the style rapidly degenerates. The prevailing reverse type is the Persian fire-altar.

Persis.

The dynasts of Characene, on the lower Tigris, issued coins (silver, bronze and base metal) from the time of the founder, Hyspaosines (*c.* 124 B.C.), down to the 2nd century A.D. The obverses of the tetradrachms have portraits of the kings; the usual reverse type is a seated Heracles.

Characene.

The Persian line of the Sassanians arose about A.D. 220, and wrested the empire from the Parthians in 226–227, under the leadership of Ardashir or Artaxerxes. This dynasty issued a national and thus Oriental coinage in gold and silver. The denominations follow the Roman system, and there are but two coins, equivalent to the aureus or solidus and the denarius. The obverse has the king's bust, usually wearing a very large and elaborate head-dress, varied with each sovereign, and the reverse the sacred fire-altar (see Pl. IV. fig. 3) ordinarily flanked by the king and a priest. The attachment which Ardashir, the founder, bore to Zoroastrianism established this national reverse type, which endured through the four hundred years of the sovereignty of his line to A.D. 652. The inscriptions are Pahlavi.

Sassanians.

The Arab coinage forms the most important Oriental group. It has a duration of twelve centuries and a half, and at its widest geographical extension was coined from Morocco to the borders of China. When the Arabs made their great conquests money became a necessity. They first adopted in the East imitations of the current Persian silver pieces of the last Sassanians, but in Syria and Palestine of the Byzantine copper, in Africa of the gold of the same currency. Of these early coins the Sassanian imitations are very curious with Pahlavi inscriptions and shorter ones in Arabic (Cufic). The regular coinage with purely Moslem inscriptions begins with the issue of a silver coin at Basrah, in 40 A.H. (A.D. 660), by the caliph 'Alī; after subsequent efforts thus to replace the Sassanian currency, the orthodox mintage was finally established, in 76 A.H. (A.D. 695), by Abdalmalik. The names of the denominations and the weight of the gold are plainly indicative of Byzantine influence. There were three coins. The dīnār of gold (Pl. IV. fig. 6) took its name from the aureus or denarius aureus, of which the solidus must have been held to be the representative, for the weight of the Arab coin (about 4·3 grammes) is clearly derived from the Byzantine gold piece. The dirhem of silver (see Pl. IV. fig. 7) is in name a revival of the Greek drachm; it weighs at most about 3 grammes. The copper piece is the fels, taking its name from the follis of the Greek empire. Commercially the gold easily exchanged, and the silver soon passed as the double of the Carolingian denier. For long these were the only coins issued, except, and this but rarely, half and quarter dīnārs. There are properly no types. There was indeed an attempt in the early Byzantino-Arab money to represent the caliph, and in the course of ages we shall observe some deviations from the general practice of Islam, particularly in the coinage of the atābegs and in Mahommedan coinages not of the Arab group, the modern Persian and that of the Moguls of Delhi. The inscriptions are uniformly religious, save in some Tatar coinages and that of the Turks. In general the coins are for the first five centuries of their issue remarkably uniform in fabric and general appearance. They are always flat and generally thin. The whole of both sides of the coins is occupied by inscriptions in the formal Cufic character usually arranged horizontally in the area and in a single or double band around. Towards the fall of the caliphate a new type of coin begins, mainly differing in the greater size of the pieces. There are new multiples of the dīnār and ultimately of the dirhem, and the silver pieces frequently have their inscriptions within and around a square, a form also used for gold. The Cufic character becomes highly ornamental, and speedily gives way to the flexuous naskhī of modern writing. The inscriptions are religious, with the addition of the year by the era of the Flight (A.D. 622), the month sometimes being added, and the mint occurs uniformly on silver and copper, but does not appear on the gold until after the fall of the Omayyad dynasty. Subsequently the official name of the caliph occurs. The religious part of the inscriptions is various, the most usual formulae being the profession of the Moslem faith: "There is no deity but God; Mahomet is the apostle of God," to which the Shi'ites or followers of 'Ali in Persia and Africa add "'Ali is the friend of God." The Moorish coins give long formulae and religious citations and ejaculations, and they, like the money of the Pathans of Delhi of the Indian class, have occasionally admonitions urging or suggesting the purer use of wealth. As Arab and other dynasties arose from the dismemberment of the caliphate, the names of kings occur, but for centuries they continued to respect the authority of their religious chief by coining in his name, even in the case of the shadowy Abbāsids of Egypt, adding their own names even when at war with the caliph, as though they were mere provincial governors. After the fall of the caliphate some new denominations came in, chiefly of heavier weight than the dirhem and dīnār, but the influence of the commercial states of Italy made the later Egyptian Mamelukes, the Turks and the later Moors adopt the gold sequin. In more modern times the dollar found its way into the Moslem coinage of the states bordering on the Mediterranean. It can be readily seen that Arab coins have no art in the same sense as those of the Greeks. The beautiful inscriptions and the arabesque devices of the pieces of the close of the middle ages have, however, a distinct artistic merit.

Caliphates.

The Omayyad coins owe their only historical value to the evidence which the silver affords of the extent of the empire at different times. The first separation of that empire dates from the overthrow of this dynasty (which had its capital at Damascus, A.D. 661–750) by the 'Abbāsids (A.D. 750, capital Bagdād) speedily followed by the formation of the rival Omayyad caliphate of the West with its capital at Cordova. The Abbāsid money has the same interest as that which it succeeded, but its information is fuller. Towards the fall of the line (which ended at Bagdād in 1258) it becomes very handsome in the great coins, which are multiples of the dīnār (see Pl. IV. fig. 10). The Spanish Omayyads (756–1031) struck silver almost exclusively. Their rise was followed by that of various lesser lines—the Idrisites (788–985, silver) and Aghlabites (800–909, gold chiefly) in western Africa, the Benī Tūlūn (868–905, gold), and, after a short interval, the Ikhshidīds (935–969, gold), both of Turkish origin, in Egypt. Meanwhile a new caliphate arose (909) in western Africa which subdued Egypt (969), the Fātimid of the line of 'Ali, and for a while the allegiance of the Moslems was divided between three rival lines, the Omayyads of Spain, the Fātimids of Africa, and the Abbāsids of Bagdād. The Fātimids introduced a new type of dīnār, with the inscriptions in concentric circles, and struck little but gold. In the interim the Persians, who had long exercised a growing influence at the court of Bagdād, revived their power in a succession of dynasties which acknowledged the supremacy of the caliphate of Bagdād, but were virtually independent. These were the Tāhirids (820–872), Saffārids (867–903), Sāmānids (874–999), Ziyārids (928–1042), and Buwoyhids or Būyids (932–1055), who mostly struck silver, but the last gold also. As the Persians had supplanted the Arabs, so they were in turn forced to give place to the Turks. The Ghaznevids formed a powerful kingdom in Afghanistan (962–1186, gold and silver), and the Seljuks established an empire (gold), which divided into several kingdoms, occupying the best part of the East (1037–1194). Of these dynasties the Seljuks of Rūm or Asia Minor (1077–1300) first strike a modern type of Arab coinage (silver, Pl. IV. fig. 9).

Omayyads. ***Abbāsids.***

The Seljūk dominions separated into many small states, the central ruled by atābegs or generals (12th–13th cent.), and the similar Turkoman Urtukis (1101–1312). The atábeg money and that of the Turks of the house of Urtuk are mainly large copper pieces bearing on one side a figure borrowed from Greek, Roman, Byzantine and other sources. They form a most remarkable innovation (Pl. IV. fig. 11). In the same age the great but short-lived empire of Khwārizm (Khiva, 1150–1231) arose in the far East. The first caliphate to disappear was that of Spain, which broke up (*c.* 1031) into small dynasties, some claiming the prerogative of the caliphates. They chiefly struck base silver (billon) coins. The Christian kings gradually overthrew most of these lines. In the meantime various Berber families had gained power in western Africa and the Almoravides and the Almohades crossed the straits and restored the Moslem power in Spain. They struck gold money of fine work, and that of the later Muwaḥḥids is remarkable for its size and thinness. At the fall of the Muwaḥḥids the only powerful kingdom remaining was the Arab house of Granada (Naṣrids), which, supported by the Berbers of Africa, lingered on until the days of Ferdinand and Isabella (1492). The Fātimite dynasty was supplanted by the Kurdish line of the Ayyubites, the family of Saladin, who from 1169 to 1250 ruled Egypt, Syria and Mesopotamia, with a number of vassal states, some governed by princes of their own family, some by the older lines of the atābeg class which they allowed to survive. In Egypt the Ayyubite coinage is of gold, elsewhere of silver and copper. The caliphate of Bagdād, which latterly was almost limited to that town, though its abundant heavy gold coinage at this very time indicates great wealth, was overthrown by the new power of the Mongols (A.D. 1258), who established a group of empires and kingdoms, comprising the whole

Eastern world eastward of the Euphrates and thence extending northward and reaching into Europe. The most important of these states for their money are that of the Mongols of Persia (1256–1349), founded by Hulagu, the conqueror of Bagdād, and that of the khans of the Golden Horde (1224–1502). Both struck silver, but there is also gold coinage of the Mongols of Persia, who more frequently use the Mongol character for their names and titles than is done under the kindred line. The power of the Mongols was held in check by the Mameluke kings of Egypt and Syria, slave-princes of two dynasties, the Baḥri (1250–1390) and the Burji (1382–1517), who struck money in the three metals. The Mongol power waned, but was revived by Tīmūr (Tamerlane), who during his rule (1369–1405) recovered all that had been lost. He and his successors (to 1500) struck silver, copper, and brass money (see Pl. IV. fig. 13). The Ottoman Turks, whose power had been gradually growing from 1299 onwards, after a desperate struggle with Tīmūr (defeat of Bayezīd I. at Angora in 1402), gradually absorbed the whole Mahommedan world west of the Tigris, except only Morocco, where they had but a momentary dominion. Constantinople fell to them in 1453, Syria, Egypt and Arabia in 1517. Their money of gold, silver, base metal and bronze is devoid of historical interest. In Tunis and Morocco a group of Berber lines long maintained themselves, but at length only one survived, that of the sharīfs of Morocco, claiming Arab descent, now ruling as the sole independent Moslem dynasty of northern Africa. Its recent coinage is singularly barbarous. It may be remarked that Tunis and Egypt have long coined Turkish money in their own mints, the more western state latterly adding the name of its hereditary prince to that of the sultan.

Persia. The coins of the shahs of Persia have their origin with Ismā'īl (1502). They are struck in the three metals, and are remarkable for the elegance of their inscriptions, sometimes in flowing Arabic, sometimes in the still more flexuous native character (see Pl. IV. fig. 12). The inscriptions are at first Arabic; after a time the religious formulae are in this language and the royal legend in Persian, usually as a poetical distich. The Persian series is also remarkable for the autonomous issues of its cities in copper, the obverse bearing some type, usually an animal. The coins of the Afghan amirs form a class resembling in inscriptions those of the Persians, and equally using Persian distichs. They commence with Ahmad Shāh Durrāni (1747).

India. The first native Indian coinage consists of primitive pieces (the earliest perhaps of the 4th century B.C.) of silver and copper with countermarks (known as "punch-marked" coins). Foreign coins (Persian and Athenian) circulated in the country from the 5th century; the silver coinage of Sophytes, a contemporary of Alexander the Great, shows Athenian influence; and there are not a few coins of Indian provenance showing direct imitation or modification of Athenian types (as the substitution of an eagle for the owl). Alexander himself is represented by a coinage of square bronze pieces. Certain tetradrachms and diobols with the name of Alexander and types: head of Zeus and eagle, probably belong to the end of the 4th century. But the coinage which was to have most effect on that of India was the Bactrian (see also under BACTRIA). This is at first a pure Greek coinage, of fine style, beginning with Diodotus (gold, silver, bronze), who revolted from Antiochus II., *c.* 250 B.C. For about a century the art of these coins, at least as regards portraiture, ranks very high for realism and vigour. The Bactrian rulers seem first to have made incursions into the Kabul valley and north India about 200 B.C., the first Indian conquests being perhaps made by Euthydemus and Demetrius. Of the latter there exists a bronze coin with the regular Greek types, but of the characteristic square Indian form, with a translation on the reverse into Kharoshṭhi characters of the obverse Greek inscription. Some of the coins of succeeding kings are very remarkable, as the tetradrachms of Antimachus (see Pl. IV. fig. 5), with a portrait reminding us of good Italian medals, and the unique 20-stater gold piece of Eucratides (the largest Greek gold coin known to us, although its genuineness has been questioned). The coinage from about 160 B.C. becomes more and more Indian, the Greek power being definitely transferred south of the Paropanisus in the second half of the 2nd century. The Attic standard which had been used for the silver gradually gave way to the Persian. The Greek princes went on reigning in India to about 20 B.C.; their chronology is very obscure. During the last two centuries B.C. several other coinages existed in north India. (1) The Scythic Sacae or Śakas invaded Bactria and then India; the earliest Śaka coinage of north India (that of Maues in the Punjab, *c.* 120 B.C.) shows Parthian influence; so do the slightly later coins of Vonones and others who reigned in Kandahar and Seistan. (2) Another large and varied group of coins consists of the issues of native states, some of which go back to before 200 B.C. Of these we may note the coins of Eran (Sagar district) showing the gradual development of the punch-marked coin into the coin with a type, made up of a collection of such punch-symbols struck from one die; and the coins of Taxila, the earliest of which are struck with a type on one side only. From these were imitated the copper coins of the Greeks, Pantaleon and Agathocles (*c.* 190 B.C.), which again inspired the later coins of Taxila with types on both sides.—In the first century of our era the Indo-Parthian dynasty of Gondophares (Gundophorus of the Apocryphal Acts of St Thomas) reigned in Kandahar and Seistan and in India, and is represented by coins. About 25 B.C. the Kushanas (as the Yue-chi were called, after their most important tribe) conquered the remains of the Greek kingdom in the Kabul valley, and in the 1st century of our era they subdued the Punjab and the territory as far as the Jumna. The well-known gold coinage of the Kushanas (due probably to the influx of Roman gold into India) is begun by Hima Kadphises (*c.* A.D. 30–78; see Pl. IV. fig. 14). The best-known kings are Kanishka, Huvishka and Vasudeva. The types are interesting, combining deities of the Greeks, Scythians, the Avesta and the Vedas and Buddha. The Greek inscriptions become meaningless after *c.* A.D. 180. The coinage in gold (of Roman weight) and copper, however, continues probably as late as A.D. 425 in the Kabul valley and the Punjab. Of other dynasties contemporary with the Kushanas, the most important are: (i.) The Andhras, a south Indian power, with territory extending across the peninsula from the Kistna and Godavari deltas to Kolhapur. The coins are chiefly of lead, but copper and silver are also known. (ii.) the satraps of Surāshṭra and Malwa, whose coinage (chiefly of silver) is copied from the half-drachms of the Greek princes of the Punjab; it lasts until the end of the 4th century. (iii.) Early in the 4th century the important imperial Gupta coinage begins with Chandragupta, and continues unbroken to the death of Skandagupta, *c.* A.D. 480. The empire at its greatest extent comprised the whole of north India, except the Punjab. The earliest gold coinage was derived from that of the Kushanas (see Pl. IV. fig. 15); later there was silver derived from the coinage of the satraps; the copper is more original in style. After *c.* A.D. 480 the empire broke up into various dynasties which lasted until A.D. 606. The Great Kushanas had been succeeded in Gandhāra (Kabul valley and Punjab) by the Kidāra Kushanas, and these, *c.* 465–470, were conquered by the Hūṇas (a branch of the Ephthalites or White Huns). The Hūṇa coinage consists almost entirely of imitations of Sassanian, Kushana or Gupta coins. Their power probably broke up *c.* A.D. 544. Of other ancient and medieval non-Mahommedan coinages in India the following may be mentioned: (1) Various series of dynasties reigning in Kanauj and Delhi, from the 7th to the 12th century. (2) Kashmir—coinage beginning probably as early as Kanishka and continuing with the same types (obverse, king standing, reverse, goddess seated) until the Mahommedan coinage in the 13th century. The coins are very rude; but the succession of the kings from *c.* A.D. 850 is fairly certain. (3) Later Shāhi coinage of Gandhara, especially the "bull and horseman" coins (*c.* A.D. 860–950). (4) Pāṇḍya, in the extreme south: this district used first the early punch-marked coins, then coins with a type on one side only, and later double-type coins; these are earlier than *c.* A.D. 300. There is a later gold coinage (type, fish) from the 7th to 10th century. (5) Cola: an earlier coinage, before *c.* A.D. 1022, with the Cola emblem, a tiger; the later coinage (obverse, king standing, reverse, king seated) influenced the coinage over most of south India. (6) Ceylon: a coinage of the rajas imitated from the Cola coins, from A.D. 1153 to 1296. (7) Chalukya coinage, chiefly of gold, in west Deccan and in Pallava country between the Kistna and Godavari; the emblem is a boar. They range from the 7th to the 11th century. (8) Vijayanagar: this power preserved the old character of the coinage south of the Kistna long after the Mahommedan conquest had transformed the coinage north of that boundary. The later coinage of South India is too obscure to be dealt with here.

The Arabs in the first days of conquest had subdued Sind and founded an independent state on the banks of the Indus, which was ruled by them for nearly two centuries from 711; but it is hard to subdue India from this direction, and the strangers decayed and disappeared. The way into India was first really opened by the campaigns of Maḥmud of Ghazni (1001–1024) who annexed the Punjab and gave a raja to Gujarat. The Pathan kings came of the Ghuri stock which rose on the ruins of the empire of Ghazni (1186). Mohammad ibn Sām (d. 1206) made Delhi his capital, and here he and his successors, Pathans or slave-kings, ruled in great splendour as the first exclusively Mahommedan Indian dynasty, latterly rivalled by a line of Pathans of Bengal. Of the Pathans of Delhi (1206–1554) we have an abundant coinage, the principal pieces being the gold mohur of about 168 grains and the silver rupee of about the same weight, besides many pieces of bronze, and at one period of base metal. The coins are large and thick, with the profession of Islam or the style of the caliph on one side, on the other the name and titles of the reigning king. Moḥammad ibn Tughlak (1324–1351, Pl. IV. fig. 8) struck coins with a great variety of inscriptions, some in the name of the shadowy 'Abbāsid caliphs of Egypt, whose successors were for a time similarly honoured by later sovereigns. Towards the close of the rule of the Pathans several dynasties arose (about 1400) in central and southern India and struck similar money, the kings of Gujarat, of Mālwā and the Bahmanids of the Deccan (1347–1526). The Pathan lines closed with Shēr Shāh, an Afghan, the last ruler of Bengal (d. 1539). Bābar, the Turki, of the family of Timur, seeking a kingdom, adventured (1525) on the conquest of Hindustan; and after long wars with Shēr Shāh, carried on by Bābar's son Humāyūn, the famous Shāh Akbar, grandson of the invader, was at length peaceably settled on the throne of Delhi, and he and his successors, the so-called Moguls of Delhi, practically subdued the whole of India. They retained the existing standard, but used the Arabic and Persian languages like the shahs of Persia. Akbar (1556–1605) issued a splendid coinage in gold and silver (Pl. IV. fig. 16),

far more elegant than that of the Pathans, but the money of his son, Jahāngir (1605–1628) is still more remarkable. He issued the famous zodiacal mohurs and rupees, as well as those astonishing Bacchanalian mohurs on which he is represented holding the wine-cup (see Pl. IV. fig. 17). Scarcely less strange is the money of the beautiful queen Nūr-Jahān. Under Shāh Jāhān (1628–1659) there is a visible falling away in the merit of the coins, and an ordinary modern style is reached in the reign of Aurungzib (1659–1707). To the close of the rule of Shāh 'Alam, the last Mogul who actually reigned (1759–1806), gold and silver money is abundant. Much of the money of the East India Company is closely imitated from this late Mogul coinage. Latterly, native states coin with Arabic and also with Sanskrit inscriptions. The most important are the kings of Oudh, the nizams of the Deccan, and the kings of Mysore, besides the maharajas of Indore and the kings of Nepāl. The coinage of Tipu Sultān (Tippu Ṣāhib) is extremely curious from his innovations in the calendar. Besides these there are a multitude of small states. Most of the Indian princes acknowledged the emperor of Delhi, but some struck independently. At last the English coinage of India has swept away nearly all these moneys, though some native states still issue their own.

We must be content with the briefest summary of the strange coinages of China and the Further East.

China. The money of China, more certainly than the square punch-marked coinage of India, may claim an origin independent of the Lydian and Greek issues. Although "money" is mentioned in Chinese literary sources as having been in use from a very early period (3rd millennium B.C.) it is probable that before the 7th century B.C. it consisted either of uncoined metal or of other media, such as silk, tortoise-shell, cowries. The shell-currency indeed played a very important part in China even in later times. It was suppressed in 335 B.C., but the usurper Wang Mang, whose reign (A.D. 9–23) separates the two Han dynasties, made an abortive attempt to revive it. The earliest metal currency of which specimens are extant is, like nearly all subsequent Chinese money, of cast bronze. The gold and silver currency, which appeared sporadically, can never have been of much importance; a *kin*, or cubic inch, of gold, representing currency of Han times, is preserved in the Paris collection. The bronze coins fall into two main classes. The earlier (as a rule) have the shape of implements, such as spades, knives, &c.; the later are the well-known round "cash" with a square hole in the centre (see Pl. IV. figs. 18, 19). They are carried strung together, and their value is minute. From the earliest knife-money should be distinguished that of Wang Mang; his coins are short and thick, and the plain ring at the end of the handle is replaced by a piece resembling in shape a cash with ring and square central hole. The older knife-currency practically came to an end with the foundation of the Ts'in dynasty in 221 B.C., though it doubtless lingered on in remote districts. With this dynasty appears the first organized state mintage. Nevertheless the economic history of Chinese coinage continues to be a melancholy record of doubtful financial expedients, debasement and forgery. The value of the coins was supposed to depend on their weight; but the weight inscribed on them was by no means always the true one. The bronze coinage from the reform of Wu-ti in 138 B.C. down to A.D. 622 is fairly uniform; it is chiefly cash of 5 chu (see Pl. IV. fig. 18). Iron money was issued at various periods. The disturbance of the coinage by the usurper Wang Mang has already been noted. The modern coinage may be said in a sense to date from the introduction of the *K'ai yuan* pattern of 7½ chu under the T'ang dynasty in A.D. 622. On the reverse of this coin was a mark (supposed to have been made by the empress Wen-teh in touching with her nail the wax model submitted to her) which has been much copied on coins of other countries in the Far East (see Pl. IV. fig. 19). From this time to the present there has been little change. Paper-money was introduced in the 9th century. The modern cash usually bears on the obverse the name of the reign and the words *t'ung pao* ("current money"), on the reverse the name of the mint. The coinage under the present (Manchu) dynasty has been regular, except during the Taiping rebellion, when some iron coins and copper tokens were issued, owing to the failure of the copper supply. Gold and silver have not been issued by the government until quite recent times (see below), with one or two unimportant exceptions, but circulate by weight. Imitations of Spanish and Mexican dollars, bearing numerous punch-marks placed on them by successive owners, are common. The most interesting Chinese coins are those of small rival dynasties and of rebels, the study of which is important for the elucidation of the obscurities of the history of the country. The Chinese medals are talismans, usually larger than coins, and bear both subjects and inscriptions. They are distributed by Taoist and Buddhist priests of temples. The money of Korea and Annam is similar to that of China, and Chinese coins were long the currency of Java, which more recently has issued the money of its Mahommedan princes.

Japan. The empire of Japan shows in its coinage that Chinese source modified by the influence of native independence which marks all its institutions. The use of a metallic currency probably began in the 5th century of our era. In character the coins show strong Chinese influence. Amongst the earliest are rude silver pieces, disks of somewhat irregular shape, with a central hole, attributed to the early 5th century; and there are also copper coins of similar character dating from the end of the 7th century. A regular copper coinage, Chinese in pattern, began with the exploitation of the copper mines in A.D. 708. There was a silver coinage in A.D. 760, and a gradually deteriorating copper currency was issued at various dates down to A.D. 958. The twelve varieties issued in these two and a half centuries are known as the twelve antique sen (see Pl. IV. fig. 20). No copper was issued by the government for six hundred years after this date; but coins of the old patterns in lead or tin circulated down to 1302. The lack of copper was supplied by the importation and imitation of Chinese cash. These imitations were due to the great nobles, who made them on their own domains. At the end of the 16th century (*Ten-sho* period) a regular currency of gold, silver and copper, and also iron was instituted, which lasted, with modifications, down to recent times (iron coins with wave-pattern reverse being cast as late as 1860). There is a billon coinage of bean-shaped pieces issued at various dates from 1601–1859. Silver also was frequently issued on the same pattern as the copper coinage; but the greater part of it circulated in ingots or plates. The small oblong pieces known as ichi-bu and ni-bu belong to the 19th century (not issued after 1868). Large plates of silver, like the gold coins to be mentioned immediately, were issued in the 16th century by some provinces. Round coins of gold of the Chinese shape were rarely cast (one in A.D. 760, another in A.D. 1599). But from the 16th century to modern times gold circulated chiefly in large oblong plates, with rounded angles, varying from over 6½ to ⅜ in. in length. These are called *o-ban* ("large plate" of 10 ryo), *ko-ban* ("small plate" of 1 ryo; see Pl. IV. fig. 21), &c. They bore various countermarks, including the mikado's crest, mint-assayer's test-marks, &c.; some bear the attestations merely written in ink (a device of the imperial officials, who charged fees for the attestations, and were not sorry that they should be easily obliterated). Small gold oblong pieces were cast at various times from 1601–1856 (Pl. IV. fig. 22). A European system of currency, with coins in gold (20 yen and under), silver (1 yen and under), nickel (5 sen) and copper (2 sen and under), was adopted in 1870. Japan has also "picture sen" (E-sen) of a magical and religious character like the temple medals already noticed under China.

Korea. Korea has had a copper coinage of Chinese style from the beginning of the twelfth century during its intervals of independence; but its coins do not become common until 1790. During the 19th century it issued an extensive copper coinage from various mints.

Annam. The earliest coins of Annam were imitations of Chinese coins, but since the 10th century its kings have issued a regular coinage bearing their regnal titles as in China. Since 1820 round and oblong silver coins have been struck, the tael and its subdivisions. Peculiar to Annam are the fine series of medals in gold, silver and copper struck since 1841 by its kings for presentation purposes, bearing lucky inscriptions, quotations from the Chinese classics, &c.

Burma, Malay Peninsula, &c. The peculiar forms of primitive currency characteristic of certain parts of Further India and the Malay Peninsula can only be barely mentioned here. Burma provides silver-money in the shape of snail-shells (a relic of a still more primitive shell-currency). The earlier Siamese ticals are derived from a ring of silver wire doubled up and countermarked. From Pahang come very curious tin "hat coins," shaped like a hollow square pyramid, truncated, with broad, square brim projecting from its base. The peoples of the Indian Ocean and Persian Gulf used in the 16th and 17th centuries pieces of silver wire called larins which in Ceylon took the shape of fish-hooks.

V. Coins of the Present Day

United Kingdom.—The standard of gold and silver has remained unchanged for over two hundred years, and until 1887 the denominations were practically the same as instituted at the great recoinage of 1816. The substitution of a bronze for a copper currency had already taken place in 1860. On the occasion of Queen Victoria's Jubilee in 1887 it was determined to mark the event by a new coinage of gold and silver, and to revise the royal portrait. Two new denominations of five and two pounds were added to the gold series, and the double florin to the silver. For the reverse type of all the gold and of the five-shilling piece, Pistrucci's design of St George and the Dragon was used, and former types of Anne and George IV. were revived for the double florin, florin, half-crown and sixpence; that of the last was, however, soon abandoned. This new coinage did not meet with general approval, especially as regards the portrait of the Queen, and in consequence a third portrait was

Fig. 1.—Sovereign (gold), England: Queen Victoria (obverse by Brock).

adopted for the gold and silver in 1893, new reverse types were prepared for the half-crown, florin and shilling, and the issue of the double florin was discontinued. The portrait of the queen was the work of the sculptor Thomas Brock, R.A., who was careful to avoid the defects which had been somewhat severely criticized in Sir J. Edgar Boehm's design of 1887. The new type for the half-crown, a spade-shaped shield within the garter, was also executed by Mr Brock; and those for the florin and shilling, three shields placed triangularly, were by Sir Edward Poynter. In 1895 a new issue of bronze money was ordered, when the queen's bust of 1893 was adopted, and a slight alteration made in the reverse type, the representation of a lighthouse and a ship, which had been added to the design in 1860, being eliminated.

FIG. 2.—Sovereign (gold), England: King Edward VII. (obverse by de Saulles).

The coinage of Edward VII. differed but slightly from that of Queen Victoria. The denominations were the same; but on the obverse the head of the king (by G. W. de Saulles, engraver to the Mint) was represented bare, the title "Britanniarum" was changed to "Britanniarum Omnium Rex," the reverse of the florin showed Britannia standing on a ship, and that of the shilling the royal crest, the lion on a crown, as on the so-called "lion-shillings" of 1826. The designing of the new coinage of George V. was entrusted to Mr Bertram Mackennal.

France.—On the establishment of the Third Republic in France in 1870, the coinage was continued on the same lines as before, the types only being altered. The silver franc of 5 grammes (78 grains) as ordered in 1793 and confirmed by the Latin Monetary Union of 1865, which included Belgium, Italy and Switzerland, and subsequently in 1868 Greece, has remained the unit of value. The denominations ordered were, in *gold*, the 100, 50 and 20 francs; in *silver*, the 5, 2 and 1 franc, and 50 and 20 centimes; and in *bronze*, the 10, 5, 2 and 1 centime. The types adopted were those which had been used previously — thus for the gold that of a genius inscribing the tables of the law, as designed by Augustin Dupré for the reverse of the constitutional coinage of Louis XVI.; for the silver and copper the head of the Republic as executed by Oudiné for the money of 1848. Subsequently, in 1871, the type of the 5 francs was changed for that of Hercules leaning on Liberty and Strength, as made by Dupré for the First Republic. In 1889 the 10 francs in gold was added to the list, having the head of the Republic crowned with corn, the work of Merley for the Republic of 1848; but only a small number of these coins was struck in that year and in 1895. No further alteration was made till after 1895, when, in consequence of suggestions that the types should be modified so as to mark the Third Republic, the artists Chaplain, Roty and Dupuis were commissioned to execute new designs—the first for the gold, the second for the silver, and the last for the bronze. The types approved were: for the gold 20 francs, the head of the Republic with a Phrygian cap, and the Gallic cock; for the silver 2 and 1 franc and 50 centimes, the sower sowing, with the rising sun in the background, and a laurel branch; and for the bronze, the bust of the Republic wearing a Phrygian cap, and on the reverse France seated amidst clouds, holding a branch and a flag, and accompanied by a genius. These coins were not issued simultaneously—the 50 centimes appearing in 1897, and 2 and 1 franc and 10, 5, 2 and 1 centime in 1898, and the 20 francs in 1899. In 1903 a nickel piece of 25 centimes was introduced, since 1904 with a polygonal edge to facilitate distinction from the silver. The quartering of the franc is a departure from the strictly decimal system, also adopted in Italy. These later coins are characteristic of modern French medallic art, which has a strong tendency to imitate that of Italy of the 16th century.

FIG. 3.—Twenty Francs (gold), France (Chaplain).

FIG. 4.—Two Francs (silver), France (Roty).

Belgium.—Of the other states which formed the Latin Monetary Union, Belgium had already in 1832 adopted the French decimal and bimetallic system, with the franc as the unit of value. Her accession to the Union, therefore, only entailed a slight modification of type and denominations, which latter were the same as in France, except that the only gold coin was the 20 francs, the 25 centimes in silver was not issued, and the pieces of 10 and 5 centimes are now in nickel. The gold and silver coins have for types the head of the king and the royal shield, those in nickel the Belgic lion and mark of value, and those in bronze the royal monogram and the lion holding the tables of the constitution. Some of the silver coins have the inscriptions in Flemish. The nickel coinage introduced in 1902 is perforated in the centre to prevent confusion with silver.

Switzerland.—Like Belgium, Switzerland had before her adhesion to the Latin Monetary Union adopted the French system, with the franc of 100 centimes or rappen as the unit of value. The denominations in gold and silver were the same as issued for Belgium, but no gold was struck before 1883. The coins of baser metal were the 20, 10 and 5 centimes in billon, which metal was in 1879 changed for the nickel, and in copper the 2 and 1 centime. Certain changes of type have from time to time occurred. The first issue of the 20 francs in 1883 shows the head of the Republic and the shield of the Confederation; but this was changed in 1897 for the head of Helvetia above a range of mountains, and on the reverse a wreath with mark of value. On the silver coins from 1874 Helvetia is represented standing instead of seated, and on the nickel money of 1879 the shield of the Republic is replaced by the head of Helvetia. The mark of value and a wreath form the general reverse type of all the silver, nickel and copper coins. Since 1888 a 5-franc piece, similar in type to the 20 francs of 1883, has been issued.

FIG. 5.—Twenty Centimes (nickel), Switzerland.

Italy.—When Italy joined the Latin Monetary Union in 1865, she adopted as the unit of her coinage the lira of 100 centesimi, equal to the franc. The coins were of gold, silver and bronze, and of the same denominations as those struck in Belgium and Switzerland. In 1894 a nickel coinage of 20 centesimi was ordered. The general type for all the coinage is the head of the king and the royal arms, but on the reverse of the copper is the mark of value; and the nickel money has on the reverse a crown with a wreath. A new nickel piece of 25 centesimi indicates a departure from the strictly decimal system. The coinages of all the small Italian states, including the Papal, have now passed out of currency.

FIG. 6.—Two Lire (silver), Italy.

Greece.—A special stipulation was made, when Greece was enrolled in the Latin Monetary Union in 1868, that all her money should be struck at a French mint. The unit of the coinage

is the drachm of 100 lepta, which, like the lira, is equivalent to the franc. The denominations are—in *gold*, the 100, 50, 20, 10 and 5 drachms; in *silver*, the 5, 2 and 1 drachm, and 50 and 20 lepta; and in *bronze*, the 10, 5, 2 and 1 lepton. In 1893 nickel was substituted for bronze, and coins of the value of 20, 10 and 5 lepta were issued in this metal. The types of the coins of Greece are similar to those of Italy. Crete has had since 1900 a coinage of its own similar to the Greek (silver of 5, 2 drachmae, 1 and ½ drachma; bronze and nickel of 20, 10, 5, 2 lepta and 1 lepton).

Germany.—Since 1871 the coinage of the German empire has been entirely remodelled. By a convention in 1857 between the states of Germany, north and south, and Austria a general coinage of a silver standard was established on the basis of the new pound of 500 grammes as sanctioned by the *Zollverein*. The contracting countries were divided into three sections, North Germany, South Germany and Austria. From the pound of fine silver of 500 grammes the Northern States struck 30 thalers, Austria 45 florins and the Southern States 52½ florins; their relation being 1 North German thaler = 1½ Austrian florins = 1¾ South German florins. The free towns of Hamburg, Lübeck and Bremen did not join the convention. The first reform in the coinage of the German empire occurred in 1871, when a new gold money was introduced, which had for its unit the silver mark (a money of account) of 100 pfennigs weighing 5·555 grammes. The new gold pieces were of the value of 10 and 20 marks, called crowns and double crowns, and the fineness was $\frac{9}{10}$ pure to $\frac{1}{10}$ alloy. This new issue necessitated a readjustment of the current values of the various silver coinages in circulation. In 1873 a further step was made by the introduction of an entirely new silver coinage throughout the empire, which was also based on the silver mark, and of a new base metal coinage in nickel and bronze. The silver coins were the 5, 2 and 1 mark and 50 and 20 pfennigs; those in nickel the 10 and 5 pfennigs, and in bronze the 2 and 1 pfennig. The silver coins were, like the gold, $\frac{9}{10}$ fine, so that 90 marks were struck to the pound of pure metal. The gold 5 marks was struck in 1877 and 1878, and the 20 pfennigs in silver was replaced by a coin of the same value in nickel in 1886. The reverse type for all the coins is the imperial eagle, but that of the obverse varies; the gold and silver showing the portrait of the reigning king or prince, but the mark, and all lesser denominations, the current value. An exception was made in the case of the coinage of the Free Towns struck at Hamburg, which has the arms of the city instead of a portrait. Each state retained its full rights of coinage, and the various mints throughout the empire with their special marks are: Berlin, A; Hanover, B; Frankfort, C; Munich, D; Dresden (removed since 1877 to Müldner-Hütte), E; Stuttgart, F; Karlsruhe, G; Darmstadt, H; and Hamburg, J. In 1876 a gold standard was proclaimed, and henceforth no person was legally bound to accept in payment more than 20 marks in silver and the value of 1 mark in nickel or bronze. The old thalers (worth 3 marks) still circulate.

FIG. 7.—Twenty Marks (gold), Germany.

Austria-Hungary.—After the convention of 1857 with Germany (see above), when Austria based her coinage on the silver standard of the florin, two series were issued—(i.) Vereinsmünzen (money of the union), in *gold*, the crown and half-crown; in *silver*, the double thaler (=3 florins) and thaler; (ii.) Landesmünzen (money of the state), in *gold*, the 4 and 1 ducat; in *silver*, the double florin and florin; in *billon*, the 20, 10 and 5 kreuzers; and in *copper*, the 4, 3, 1 and ½ kreuzer. In 1868 Austria abandoned the convention, but made no change in her money; and in the same year the coinage of Hungary was made uniform with that of the empire, both in standard and denominations. In 1870 the Vereinsmünzen crown and half-crown were discontinued, and their place was taken by 8- and 4-florin pieces which were of the current value of 20 and 10 francs. In 1892 the monetary system of Austria-Hungary was entirely reformed on a gold standard, the unit of account being the crown of 100 hellers. This is a decimal coinage, and the denominations are, in *gold*, the 20 crowns (of 164 from the kilogramme of fine gold), 10 crowns and ducat (=9 silver crowns 60 hellers); in *silver*, the crown (=10d.) and half-crown; in *nickel*, the 20 and 10 hellers; and in *bronze*, the 2 and 1 heller. The gold ducat was a trade-money (Handelsmünze) of the current value of 10 francs, and it displaced the 8- and 4-florin pieces of 1870. The types of the Austrian and Hungarian coins somewhat vary. The Austrian gold coins show the head of the emperor and the two-headed eagle, but those of Hungary a full-length figure of the emperor and the national shield surmounted by the crown of St Stephen held by angels. The silver coins of both series have the head of the emperor and the mark of value under the imperial or royal crown. The nickel and bronze money of Austria displays the imperial eagle on the obverse, whilst that of Hungary has the crown of St Stephen. The legends are respectively in Latin and Magyar.

FIG. 8.—Florin (silver), Austria-Hungary.

Spain.—The unit of the Spanish coinage from 1864 to 1868 was the silver escudo of 200 grains divisible into 10 reals. On the dethronement of Isabella in 1868 the provisional government adopted the principles of the Latin Monetary Union and made the peseta the unit of account, this coin being equivalent to the franc. The coins struck during 1869–1870 were, in *gold*, the 100 pesetas; in *silver*, the 5, 2 and 1 peseta, and the 50 and 20 centimos; and in *bronze*, the 10, 5, 2 and 1 centimo. The obverse type of each metal varied; on the gold Spain is standing; on the silver she is reclining; and on the bronze she is seated. During his short reign (1870–1873) Amadeus I. struck only gold coins of 100 and 25 pesetas and silver of 5 pesetas, and there was practically no money issued during the republic which followed his abdication. Don Carlos during the insurrection of 1874–1875 struck 5 pesetas in silver and 10 and 5 centimos in bronze bearing his portrait and title "Carolus VII." After the restoration of Alphonso XII. the coinage consisted of 25 and 10 pesetas in gold; 5, 2 and 1 peseta and 50 centimos in silver; and 10 and 5 centimos in bronze. This coinage was continued under Alphonso XIII., but in 1887 the 20 pesetas in gold was substituted for the 25 pesetas, and in 1897 large coins were struck of 100 pesetas. The types show the head of the king on the obverse and the shield with or without the pillars of Hercules on the reverse.

FIG. 9.—Peseta (silver), Spain.

Portugal.—A gold standard was adopted by Portugal in 1854, the unit of value being the milreis of 1000 reis. The coins are, in *gold*, the crown or 10 milreis and the half, fifth and tenth crown or milreis; in *silver*, the 10, 5 and 2 testoon; in *nickel*, the 100 and 50 reis; and in *bronze*, the 20, 10 and 5 reis. The general type of the gold and silver is the head or bust of the king and the royal shield; but the bronze varies in having on the obverse a shield and on the reverse the mark of value.

Denmark, Sweden and Norway.—Previous to 1872 in Denmark the unit of value was the silver *rigsbankdaler* of 96 skillings; in Sweden, the *rigsdaler* of 100 öre; and in Norway, the *species-thaler* of 120 skillings; but in that year a monetary convention was concluded between these countries establishing a decimal coinage, which had for its unit the krone of 100 öre, and of which

the standard was gold. The denominations are, in *gold*, the 20, 10 and 5 kroner; in *silver*, the 2 and 1 krone, and 50, 25 and 10 öre; and in *bronze*, the 5, 2 and 1 ör. The gold and silver money of Sweden and Norway to the 50 öre bears the head of the king and the royal shield; the silver of smaller denominations and the bronze, the monogram of the king and the mark of value. Since the separation of the two kingdoms in 1906, Norway has a coinage of its own in the name of Haakon VII. In Denmark the gold and silver have the head of the king, and, for reverse type, a figure of Denmark, a shield, or the mark of value. The bronze coins are similar to those of Norway and Sweden.

Russia.—The Russian coinage previous to 1885 was based on the silver rouble of 278 grains of pure metal; but during the greater part of the reign of Alexander II. (1855–1881) the currency consisted almost entirely of paper money. In 1885 Alexander III. determined to place the coinage on a proper footing, and introduced the rouble of 100 copeks as the unit of account, with a relative value of gold and silver of 1 to 15½. The coins issued were, in *gold*, the imperial of 10 roubles, and the half-imperial; in *silver*, the rouble, and the 50, 25, 20, 15, 10 and 5 copeks; and in *copper*, the 5, 3, 2, 1, ½ and ¼ copek. In 1897 the relative value of gold and silver was advanced to 1 to 23¼, thus raising the current value of the imperial to 15 roubles; but no change was made in the weights of the coins, and the silver rouble remained the unit of account. In the same year a piece of 5 roubles, called the one-third imperial, was added to the gold coins. The general types of the gold and silver show the head of the emperor and the imperial eagle; and of the copper, the imperial eagle and mark of value.

FIG. 10.—Seven and one-half Roubles (gold), Russia.

Georgia, Poland and Finland.—The separate issues of Georgia and Poland were suppressed in 1833 and 1847 respectively; but Finland in 1878 established a decimal coinage of gold, silver and bronze on the principles of the Latin Monetary Union, having the *markhaa* (=1 franc) as its unit of value.

Turkey.—There has been practically no change in the money of the Ottoman empire since the reforms of Abdul-Medjid in 1844, when the piastre, or 40-para piece, of the current value of 2¼d., was made the unit of the coinage; 100 piastres go to the gold medjidieh or pound. The denominations are, in *gold*, the 500, 250, 100, 50 and 25 piastres; in *silver*, the 20, 10, 5, 2, 1 and ½ piastre; and in *copper*, the 40, 20, 10, 5 and 1 para. The type in all metals is, on the obverse, the Sultan's *tughra*, or cipher, and on the reverse, a wreath, and the name of the mint, date, &c.

Balkan States.—Since the dismemberment of the Ottoman empire the kingdoms of Rumania and Servia, and the principality of Bulgaria, have each adopted the decimal system of the Latin Monetary Union. In Rumania the unit of account is the *leu* of 100 *bani*; in Servia, the *dinar* or 100 *paras*; and in Bulgaria, the *lev* of 100 *stotinki*—each of these units being the equivalent of the franc. In all these states gold, silver, bronze and nickel is current money.

United States.—In America the most important event connected with the coinage was a change of standard. (See MONEY). Previous to 1873 the standard was silver, having for its unit the dollar of 412½ grains of $\frac{9}{10}$ fine; but in that year a gold standard was adopted, the gold dollar of 25·8 grains and $\frac{9}{10}$ fine being the sole unit of value. This change of standard was accompanied by a slight modification of the denominations, which became, in *gold*, the double-eagle, eagle, half and quarter eagle, three dollars and dollar; in *silver*, the half and quarter dollar, 20 cents and dime; in *nickel*, the 5 and 3 cents; and in *bronze*, the cent. In addition to these a silver piece called the "trade dollar" of 420 grains was struck, not for circulation in the States, but for export to China. The following changes have since occurred: In 1878 the silver dollar of 412½ grains was resumed, and the 20 cents discontinued; in 1887 the issue of the "trade dollar" was suspended; and in 1890 the same fate befell the three dollars and dollar in gold, and the three cents in nickel. The types are—*gold*, head of Liberty and eagle; *silver*, head of Liberty, or Liberty seated, and eagle, except the dime, which has the mark of value; *nickel*, shield (5 cents) and head of Liberty; *bronze*, head of an Indian, and (1910) bust of Lincoln; with reverse types for either metal, the mark of value.

Canada, &c.—The currency for the Dominion of Canada, which includes Nova Scotia, New Brunswick and British Columbia, is of silver and bronze, based on the system of the United States. The denominations are 50, 25, 20, 10 and 5 cents in silver, and the cent in bronze; and they also have a uniform type of the sovereign's head and mark of value. The same system prevails in Newfoundland, which also issues the double dollar in gold: this is the only gold coin issued in a British colony whose standard is not the same as that of the mother country. There is a separate coinage for Jamaica, but of nickel only, and consisting of the penny, halfpenny and farthing.

Mexico, &c.—We need not give any detailed account of the coins of Mexico, and of the various states of Central and South America, in nearly all of which there have been radical changes since 1870. Most of them have adopted the decimal system, with a gold, silver or bi-metallic standard; the unit of value in the gold standard being generally the peso of 3·225 grammes, and in the silver also the peso, but of silver of 20, 25 or 27 grammes.

India.—As to the coins of the East and Far East, we will limit our remarks to the more important countries. In British India the rupee of silver of 150 grains is still the unit of value. In 1893 the mints were closed to the unrestricted coinage of silver for the public. In 1899 they were opened to the free coinage of gold, the sovereign being declared legal tender. At present £1=15 rupees of 1s. 4d.; 1 rupee=16 annas; 1 anna=4 pice; 1 pice=3 pie=1 farthing.

Persia.—In Persia since 1879 a decimal system in conformity with the principles of the Latin Monetary Union has been adopted, having for its unit the *krān* weighing 78 grs., thus being equivalent to the franc, but since reduced to 71 grs. or even less. The denominations are: in *gold*, the 10, 5, 2, 1, ½ and ¼ toman (the toman=10 krāns); in *silver*, the 5, 2 and 1 krān (=20 shahis), and the 10 and 5 shahis; and in copper, the 4, 2 and 1 shahi (=2 pals), and the pal.

Japan.—Since 1870 Japan has formed its coinage on the European decimal system in place of the ancient national coins, the *obangs* and *itsibus*, the unit being the *yen* of 100 *sen*. The standard was bi-metallic, and the relation of gold and silver stood at 1–16·17. In 1898 a gold standard was adopted, the issue of the silver yen was suspended, and the weight of the gold money was reduced by one-half. The coins issued since that date are, in *gold*, the 20, 10 and 5 yen; in *silver*, the 50, 20 and 10 sen; in *nickel*, the 5 sen; and in *bronze*, the sen and half-sen. There is one general type for all the silver, nickel and bronze coins, being the dragon on the obverse and a wreath of flowers with mark of value on the reverse. The gold varies in having flags and flowers on the reverse. On the silver and bronze coins the legends are in English as well as in Japanese.

China.—In 1890 China followed the example of Japan, but only to a limited extent, and instituted a silver coinage having as its unit a dollar of the same value as the United States silver dollar and the Japanese yen. It is calculated in fractions of the *tael*, a money of account of the value of 2s. 11⅛d. The coins are the dollar, and the 50, 25, 10 and 5 cents, with the Chinese dragon and inscriptions, mint and mark of value in English on the obverse, and on the reverse the mark of value in Chinese and Manchu. They were first struck at Canton and Wei-Chang, but later other mints have been established. These are not, strictly speaking, imperial money, the sole official coinage and monetary unit being the copper cash. A decree of the 20th of November 1905 proposed to establish an official dollar on the basis of the Kuping tael. An edict of May 1910 provides for a standard currency dollar of 72 candareens, with a subsidiary decimal coinage in silver, nickel and copper, for circulation throughout the empire.

Korea has had since 1905 a new coinage on the Japanese system, but with the Korean date.

Hong Kong.—The only other Asiatic coinage we shall note is that of Hong Kong, where in 1866 was established a coinage, which was also based on the United States standard, having the silver dollar as its unit. The denominations are the dollar and 50, 20 and 5 cents in silver, and the cent and mill in bronze; and, with the exception of the mill, they all have for type the sovereign's head and the mark of value. In connexion with this coinage there was issued in 1895 a "trade dollar" for special currency in the Straits Settlements and Hong Kong in lieu of the Mexican dollar, the scarcity of which was a considerable hindrance of trade. This coin, which was struck at the Bombay mint, shows on the obverse Britannia holding a

trident and shield, and on the reverse within an ornamental design the denomination in Chinese and Malay. Since 1903, however a new

FIG. 11.—" Trade Dollar " (silver), Hong Kong.

special dollar with the king's head has been issued for the Straits Settlements.

Egypt.—Glancing cursorily at the coinage of Africa, we may note that since 1885 Egypt has adopted a gold standard with the gold pound of 100 piastres as the unit of account. The piastre is no longer divisible into 40 paras, but into 10 *ochr-el-guerche* or tenths. The types are similar to the Turkish money, and though bearing the legend " struck at Cairo " the coins are really made at Birmingham. For some years gold has not been issued.

Abyssinia.—In Abyssinia since 1893 there has been a silver coinage, but the Austrian Maria Theresa dollar is still current. The new coins are, in silver, the talari (=dollar, worth about 2s.), ½, ¼ and ⅛ talari, and in copper, the guerche, and ½ and ¼ guerche. They show on one side the head of the king, and on the other a lion holding a banner.

Zanzibar.—Zanzibar has also issued a dollar of the fixed value of 2 rupees and 2 annas, and a copper coin called a *pessa* (=136th of a dollar).

Sudan.—The African coinages which have attracted exceptional attention are those of the Sudan and the South African Republic. The former dates from 1885, when the Mahdi struck the pound of 100 piastres in gold and the 20 piastres in silver, of the same type as the Egyptian coins, but on the silver piece were placed the words " By order of the Mahdi," but no mint name. His successor, Abdullah, struck pieces of 20, 10, 5, 2 and 1 piastre in silver and 10 paras in copper, but no gold. They bear the name of the mint, Omdurman, and the word *makbul*, *i.e.* accepted. At first the silver coins were of 6 parts silver and 2 copper, but in a few years they were so debased that they degenerated into mere pieces of copper washed with silver. The last issue is dated 1897 (A.H. 1315).

Congo Free State (*Belgian Congo*).—The coinage issued since 1887 consists of silver of 5, 2, 1 fr. and 50 centimes, and copper (with central hole) from 10 centimes to 1 centime.

Transvaal.—The first attempt at a separate coinage in the Transvaal was in 1874, when President Burgers issued sovereigns or pounds showing his portrait on the obverse and the shield of the Republic on the reverse. They were struck by Messrs Heaton of Birmingham, but as each piece of the current value of 20s. cost 26s. to strike, only £680 worth was issued, and but few of these passed into circulation, being preserved as curiosities. No further attempt was made till 1891, when President Kruger induced the Raad to order a coinage in gold, silver and bronze after the English standard. The first issue occurred in 1892, and consisted of the pound and half-pound in gold; the crown, half-crown, florin, shilling, sixpence and threepence in silver; and the penny in bronze. They are all of the same type as the pound of 1874, but with the portrait of President Kruger on the obverse. The first issue of the pound, half-pound and crown was minted at Berlin, and a curious mistake was made in the arms of the state, the wagon being represented with two shafts instead of with one. This blunder was soon noticed, and a recoinage took place in the same year at Pretoria. Since the annexation British coins have been legal tender, but a new copper coinage was approved in 1904.

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(R. S. P.; H. A. G.; G. F. H.*)

NUMMULITE, NUMMULITES, A. d'Orbigny's name for a genus of Perforate Foraminifera (*q.v.*), distinguished by the flattened, lenticular discoid shell of many turns, finely perforated; chambers subdivided by incomplete septa into squarish chamberlets. This genus is especially abundant in Eocene Limestones, which attain great thickness around the Mediterranean basin; the Pyramids of Egypt are built of it.

NUN (O. Eng. *nunne*, from Lat. *nonnus, nonna*, familiar terms for an old man or woman), a member of a community of women, living under vows a life of religious observance (see MONASTICISM). In ecclesiastical Latin *nonnus* was used by the younger members of a religious community for their elders, and so, in the *regula* of St Benedict, cap. 62, *Juniores autem Priores suos nonnos vocant quod intelligitur paterna reverentia* (Du Cange, *Glossarium, s.v. nonnus*). While *nonna* has remained as the generic name of a female religious, *nonnus* has been replaced by *monachus* and its various derivatives (see MONK).

NUNATAK, a name applied in Greenland (and thence extended in use elsewhere) to a hill or mountain peak appearing above the surface of a glacier. Greenland is for the most part covered by an ice-cap of a certain thickness which moves slowly downwards to the sea. It will rise upwards and pass over a barrier if there is no outlet, but it will flow between and around mountain peaks leaving them standing as hills (nunataks) above the general surface of the ice-cap. These prominences are sometimes covered with arctic vegetation, and arctic flowers bloom freely upon them in the summer.

NUNCIO, or NUNTIUS APOSTOLICUS, a representative of the pope sent on diplomatic mission. The nuncios are of lower rank than the *legati a latere*, but have practically superseded them as ambassadors of the papacy. Nuncios were permanently established at various courts and ecclesiastical centres during the 16th century. According to the decision of the congress of Vienna the diplomatic rank of a papal nuncio corresponds to that of an ambassador. The powers of a nuncio are limited by his instructions. If a cardinal, as rarely is the case, he uses the title pro-nuntius. The pro-nuntius at Vienna has practically the position of a *legatus a latere*.

NUNCOMAR or NANDA KUMAR (d. 1775), Indian official, best known for his connexion with Warren Hastings (*q.v.*), was governor of Hugli in 1756, and in 1764 he was appointed collector of Burdwan in place of Hastings, which resulted in a long-standing enmity. In 1775, when Hastings was governor-general, Nuncomar brought accusations of peculation against him, which were entertained by Francis and the other members of council inimical to Hastings. While the matter was still pending Nuncomar was indicted for forgery, condemned and executed. Warren Hastings and Sir Elijah Impey, the chief justice, were both impeached, and were accused by Burke and afterwards by Macaulay of committing a judicial murder; but Sir James Stephen, who examined the trial in detail, states that the indictment for forgery arose in the ordinary course, was not brought forward by Hastings, and that Impey conducted the trial with fairness and impartiality.

See Sir James Stephen, *The Story of Nuncomar* (2 vols., 1885); and, for another treatment of the case, H. Beveridge, *The Trial of Nanda Kumar* (Calcutta, 1886).

NUNEATON, a market town and municipal borough in the Nuneaton parliamentary division of Warwickshire, England, on the river Anker, a tributary of the Tame, and on the Coventry canal. It is an important junction of the London and North

Western railway, by which it is 97 m. N.W. from London, and it is served by the Leicester-Birmingham branch of the Midland railway. Pop. (1901) 24,996, rapidly increasing. The situation is low and almost encircled by rising ground. The church of St Nicholas is a large and handsome structure in various styles of architecture, and consists of nave, chancel and aisles, with a square embattled tower having pinnacles at the angles. It contains several interesting monuments. A free grammar school was founded in the reign of Edward VI., and an English free school for the instruction of forty boys and thirty girls by Richard Smith in 1712. The ribbon industry is of less importance than formerly, but there are ironworks, cotton, hat, elastic and worsted factories, and tanneries; the making of drain-pipes, tiles and blue and red bricks is a considerable industry. In the neighbourhood there are also coal and ironstone mines. The prefix of the name of the town is derived from a priory of nuns founded here in 1150. In the reign of Henry III. a weekly market was granted to the prioress. Nuneaton was incorporated in 1907, and the corporation consists of a mayor, six aldermen and twelve councillors. Area 10,597 acres.

NUNEZ, PEDRO (PETRUS NONIUS) (1492–1577), Portuguese mathematician and geographer, was born at Alcacer do Sal, and died at Coimbra, where he was professor of mathematics. He published several works, including a copiously-annotated translation of portions of Ptolemy (1537), and a treatise in two books, *De arte atque ratione navigandi* (1546). His clear statement of the scientific equipment of the early Portuguese explorers has become famous. A complete edition of all his writings appeared at Basel in 1592.

See F. de B. Garcão-Stockler, *Ensaio historico sobre a origem e progressos das mathematicas em Portugal* (Paris, 1819); R. H. Major, *Prince Henry the Navigator* (London, 1868, p. 55).

NUÑEZ CABEZA DE VACA, ALVARO (*c.* 1490 – *c.* 1564), Spanish explorer, was the lieutenant of Pamfilo de Narvaez in the expedition which sailed from Spain in 1527; when Narvaez was lost in the Gulf of Mexico, Cabeza de Vaca succeeded in reaching the mainland somewhere to the west of the mouths of the Mississippi, and, striking inland with three companions, succeeded, after long wandering and incredible hardship, in reaching the city of Mexico in 1536. Returning to Spain in 1537, he was appointed "adelantado" or administrator of the province of Rio de la Plata in 1540. Sailing from Cadiz in the end of that year, after touching at Cananea (Brazil), he landed at the island of St Catharine in the end of March 1541. Leaving his ships to proceed to Buenos Aires, he set out in November with about 150 men to find his way overland to Ascension (Asunción) for the relief of his countrymen there. The little band reached their destination in the following year. After various successes in war and diplomacy in his dealings with the Indians, Nuñez was sent home under arrest in 1544, and in 1551 was banished to Africa by the council of the Indies for eight years. He was recalled in about a year and appointed to a judgeship in Seville, where he died not later than 1564.

The *Naufragios* ("Shipwrecks") of Cabeza de Vaca, which relate to the Florida expedition and his journey to the city of Mexico, appeared at Zamora in 1542; the work has frequently been reprinted, and an annotated English translation was published by T. Buckingham Smith in 1851. His *Comentarios* (1555) chronicle the events of the South American expedition. See Fanny Bandelier, *Journey of A. Nuñez Cabeza de Vaca* (ed. A. F. Bandelier, New York, 1905).

NUÑEZ DE ARCE, GASPAR (1834–1903), Spanish poet, dramatist and statesman, was born at Valladolid, where he was educated for the priesthood. He had no vocation for the ecclesiastical state, plunged into literature, and produced a play entitled *Amor y Orgullo* which was acted at Toledo in 1849. To the displeasure of his father, an official in the post office, the youth refused to enter the seminary, and escaped to Madrid, where he obtained employment on the staff of *El Observador*, a Liberal newspaper. He afterwards founded *El Bachiller Honduras*, a journal in which he advocated a policy of Liberal concentration, and he attracted sufficient notice to justify his appointment as governor of Logroño, and his nomination as deputy for Valladolid in 1865. He was imprisoned at Cáceres for his violent attacks on the reactionary ministry of Narvaez, acted as secretary to the revolutionary Junta of Catalonia when Isabella was dethroned, and wrote the "Manifesto to the Nation" published by the provisional government on the 26th of October 1868. During the next few years he practically withdrew from political life till the restoration, when he attached himself to Sagasta's party. He served under Sagasta as minister for the colonies, the interior, the exchequer and education; but ill-health compelled him to resign on the 27th of July 1890, and henceforth he refused to take office again. He was elected to the Spanish Academy on the 8th of January 1874 and was appointed a life-senator in 1886. He died at Madrid on the 12th of February 1903.

Nuñez de Arce first came into notice as a dramatist, and he remained faithful to the stage for nearly a quarter of a century. In addition to three plays written in collaboration with Antonio Hurtado, he produced *¿Quién es el autor?* (1859), *La Cuenta del Zapatero* (1859), *¡Como se empeña un marido!* (1860), *Deudas de la honra* (1863), *Ni tanto ni tan poco* (1865), *Quien debe, paga* (1867) and *El haz de leña* (1872). But Nuñez de Arce's talent was more lyrical than dramatic, and his celebrity dates from the appearance of *Gritos del combate* (1875), a collection of poems exhorting Spaniards to lay aside domestic quarrels and to save their country from anarchy, more dangerous than a foreign foe. He maintained his position (in popular esteem) as the only possible rival of Campoamor by a series of philosophic, elegiac and symbolic poems:—*Raimundo Lulio*, *Ultima lamentación de Lord Byron* (1879), *Un Idilio y una Elegía* (1879), *La Selva oscura* (1879) and *La Visión de Fray Martín* (1880). The old brilliance sets off the naturalistic observation of *La Pesca* (1884) and *La Maruja* (1886). The list of his works is completed by *Poemas cortos* (1895) and *¡Sursum corda!* (1900); *Hernán el lobo*, published in *El Liberal* (January 23, 1881) and *Luzbel* remain unfinished. His strength lies in the graciousness of his vision, his sincerity and command of his instrument; his weakness derives from his divided sympathies, his moods of obvious sentiment and his rhetorical facility. But at his best, as in the *Gritos del combate*, he is a master of virile music and patriotic doctrine. (J. F.-K.)

NUORO, a town and episcopal see of Sardinia, Italy, in the province of Sassari, 38½ m. E. of Macomer by rail. Pop. (1901) 6739. It is situated 1905 ft. above sea-level in the east central portion of the island, amid fine scenery. Nuoro was the capital of a province from 1848 to 1860. It is connected by road with Fonni, Bitti and Orosei. An inscription discovered *in situ* about 13 m. W. of Nuoro in 1889, near Orotelli, has the letters FIN NVRR (*fin(es)Nurr. . .*), which are explained as referring to the boundaries of the territory of Nuoro in Roman times, showing (what was not known before) that the name and the place are of Roman origin (F. Vivanet in *Notizie degli scavi*, 1889, 202). (T. As.)

NUPE, formerly an independent state of W. Africa, now a province in the British protectorate of Nigeria. Under Fula rule, Nupe occupied both banks of the Niger for a distance of some 150 m. above the Benue confluence. Only the part of Nupe north of the Niger now constitutes the province; area 6400 sq. m.; estimated pop. about 150,000. It is in many portions highly cultivated, and owing to its admirable water supply is likely to prove particularly valuable as a field for the extensive cultivation of cotton. Bida (*q.v.*), the capital, is connected by railway (built 1907–1908) with Baro, a port on the Niger 70 m. above Lokoja.

Nupe had an ancient and very interesting constitution of which the leading features were adopted by the Fula when their rule was established about the year 1859. Bida was founded in that year. Nupe was conquered by the troops of the Niger Company in 1897, and the legal status of slavery was then nominally abolished. The company was, however, unable to occupy the country, and on the withdrawal of its troops the deposed emir returned. In 1901 it became necessary to subdue Nupe a second time. British troops marched to Bida. The emir fled without fighting and was deposed. Another emir was appointed in his place, took the oath of allegiance to the British crown, and worked cordially with the British resident

who was stationed at Bida. The province is divided into three administrative districts—Bida, Lapai and Agaie. These are again divided into nine native districts, five to the west and four to the east of the Kaduna river. Provincial courts of justice have been established.

See NIGERIA, BIDA. For an interesting account of the ancient constitution of Nupe see "The Fulani Emirates of Northern Nigeria," by Major J. A. Burdon in the *Geo Journ.*, vol. xxiv (London, 1904).

NUREMBERG (Ger. *Nürnberg*), a city of Germany, the second town in Bavaria in size, and the first in commercial importance. It lies in the district of Middle Franconia in a sandy but well-cultivated plain, 124 m. by rail N.W. from Munich. The city is divided by the small river Pegnitz, a tributary of the Main, into two parts, called respectively the Lorenzer Seite and the Sebalder Seite, after the two principal churches. There are four islands in the Pegnitz, which is crossed here by fourteen bridges. Formerly among the richest and most influential of the free imperial towns, Nuremberg is one of the few cities of Europe that have retained their medieval aspect largely unimpaired. Considerable sections of the ancient walls and moat still remain, though the demolition of portions to meet the exigencies of modern traffic and expansion has somewhat destroyed its quaint medieval character. Of the 365 bastions which formerly strengthened the walls, however, nearly 100 are still *in situ*, and a few of the interesting old gateways have also been preserved. Most of the streets are narrow and crooked, and the majority of the houses have their gables turned towards the street. The general type of architecture is Gothic, but the rich details, which are lavished with especial freedom in the interior courts, are usually borrowed from the Renaissance. Most of the private dwellings date from the 16th century, and there are practically none of earlier date than the 15th century. A praiseworthy desire to maintain the picturesqueness of the town has led most of the builders of new houses to imitate the lofty peaked gables, oriel windows and red-tiled roofs of the older dwellings. Altogether Nuremberg presents a faithful picture of a prosperous town of three hundred years ago.

The old burg, or castle (Kaiserschloss), is picturesquely placed on a rock on the north side of the town. This dates most probably from the early part of the 11th century, but it received its present form mainly during the reign of the emperor Frederick I. about 150 years later. It was restored in careful harmony with its original appearance in 1854–1856, and part of the interior is fitted up as a royal residence, the families of the German emperor and of the king of Bavaria having apartments therein. In the Heidenturm are two late Romanesque chapels, one above the other. Other parts of the castle are the pentagonal tower, the oldest building in the town, wherein are preserved the famous "iron virgin of Nuremberg," and other instruments of torture; the granary (Kornhaus), also called the Kaiserstallung; and the Vestnertor or Vestnerturm. The castle of Nuremberg was a favourite residence of the German sovereigns in the later middle ages, and the imperial regalia were kept here from 1424 to 1796. Near it are the remains of the burg of the Hohenzollerns, the principal existing part of which is the chapel of St Walpurgis, which was destroyed with the rest of the building in 1420, but was restored in 1892. Not far from these ruins stands the Luginsland, a stronghold with four corner turrets, said to have been built by the burghers in 1367 as a watch-tower against the burg of the Hohenzollerns.

Nuremberg contains several interesting churches, the finest of which are those of St Lorenz, of St Sebald and of Our Lady. All three are Gothic edifices and are notable for their elaborately carved doorways, in which free play has been given to the exuberant fancy of the Gothic style, and all three enshrine valuable treasures of art. The Church of St Lawrence, the largest of the three, was built in the 13th and 14th centuries and has recently been restored. In it is the masterpiece of the sculptor, Adam Krafft, consisting of a ciborium, or receptacle for the host, in the form of a florid Gothic spire 65 ft. high; the carving of this work is exquisitely minute and delicate. The west front contains a magnificent rose-window, and some of the stained glass dates from the 15th and 16th centuries. In front of the altar hangs a curious piece of wood-carving by Veit Stoss, representing the Salutation. The shrine of St Sebald, in the church of St Sebald, consisting of a bronze sarcophagus and canopy, in the richest Gothic style, adorned with numerous statues and reliefs, is looked upon as one of the greatest achievements of German art. It was executed by Peter Vischer, the celebrated artist in bronze, who was occupied on the work for thirteen years (1506–1519), and has here shown himself no unworthy rival of Lorenzo Ghiberti. The church of Our Lady possesses some fine old stained-glass windows and some paintings by Michael Wohlgemuth. The Tuchersche altar, with its winged picture, is one of the finest works of the Nuremberg school about the middle of the 15th century. This church was restored in 1878–1881. Other noteworthy churches are those of St Jacob, founded about 1200 and restored in 1824; and of St Aegidius.

The town hall (Rathaus), an edifice in the Italian style, erected in 1616–1619, contains frescoes by Dürer, and a curious stucco relief of a tournament held at Nuremberg in 1446. The building incorporated an older one of the 14th century, of which the great hall, with its timber roof, is part. The most interesting secular buildings are the houses of the old patrician families. Among the most characteristic of these are the old residence of the counts of Nassau, and the houses of the Tucher, Funk and Peller families. A special interest attaches to the dwellings of Albert Dürer, Hans Sachs, the cobbler-poet, and Johann Palm, the patriotic bookseller who was shot by order of Napoleon in 1806. There are statues of Dürer, Sachs, Melanchthon, the reputed founder of the grammar-school, the navigator Martin Behaim, and Peter Henlein, the inventor of the watch; and the streets are further embellished with several fountains, the most noteworthy of which are the Schöne Brunnen, 1385–1396, in the form of a large Gothic pyramid, adorned with statues of the seven electors, the "nine worthies," and Moses and the prophets; and the Gänsemännchen or goose-mannikin, a clever little bronze figure by Pankratz Labenwolf. On the way to the cemetery of St John, which contains the graves of Dürer, Sachs, Behaim and other Nuremberg worthies, are Krafft's stations, seven pillars bearing stone reliefs of the Passion, and ranked among the finest works of the sculptor.

The Germanic national museum, established in an old Carthusian monastery, has developed into one of the largest and most important institutions of its kind in Germany. It includes a picture-gallery, principally of German works of the 15th and 16th centuries, including masterpieces by Holbein, Dürer, Wohlgemuth and others. The municipal library contains about 2000 manuscripts and 80,000 printed books, some of which are of great rarity.

The population of Nuremberg was, in 1905, including a garrison of about 3000 men, 294,344, of whom 145,354 were males and 148,990 females. Of these again 196,907 were Protestants (Evangelical), 86,939 Roman Catholics and 6819 Jews. At the height of its prosperity in the middle ages the population has been estimated at as high a figure as 150,000, but there seems good reason to believe that it did not exceed 40,000 to 50,000 souls. In 1818 it had sunk to 27,000, but since then has steadily increased. On the 1st of January 1899, thirteen outlying communes were incorporated, extending the area of the town from 2805 to 13,700 acres.

Nuremberg occupies a high place among the industrial and commercial centres of Europe. The principal manufactures are toys and fancy articles in metal, carved wood and ivory, which are collectively known as Nuremberg wares. Nuremberg is the chief market in Europe for hops. It is an important junction for railways to all parts of Germany, and is on the main line from Cologne and Frankfort-on-Main to Munich, Vienna and Eger. In addition to its railways, trade is facilitated by the Ludwig canal, connecting the Danube and the Main.

History.—The first authentic mention of Nuremberg, which seems to have been called into existence by the foundation of the castle, occurs in a document of 1050; and about the same period

it received from the emperor Henry III. permission to establish a mint and a market. It is said to have been destroyed by the emperor Henry V. in 1105, but if this was the case the town must have been very speedily rebuilt, as in 1127 we find the emperor Lothair taking it from the duke of Swabia and assigning it to Henry the Proud, duke of Bavaria. An imperial officer, styled the burggrave of Nuremberg, who, however, seems to have been merely the military governor of the castle, and to have exercised no sway over the citizens, became prominent in the 12th century. This office came into the hands of the counts of Hohenzollern at the beginning of the 13th century, and burggrave of Nuremberg is still one of the titles of their descendant, the German emperor. The government of the town was vested in the patrician families, who, contrary to the usual course of events in the free towns, succeeded in permanently excluding the civic gilds from all share of municipal power, although in 1347 there was a sharp rising against this oligarchy. The town was specially favoured by the German monarchs, who frequently resided and held diets here, and in 1219 Frederick II. conferred upon it the rights of a free imperial town. By the terms of this charter the town appears to have been immediately subject to the king, who was represented by his magistrate (or *Schultheiss*). In a short time, however, the latter appears to have been assisted by a council, consisting of 13 *consules* (burgomasters) and 13 *scabini* (assessors), who collectively formed the governing and administrative body under the presidency of the bailiff. The last-named official soon confined himself to the judicial magisterial office, and a further increase in the numbers of the council having taken place by the appointment of 8 nominees of the king, a municipal council of 34, under the direction of the senior consul or burgomaster, dealt with matters exclusively civic. Later this council (the kleine Rat) was increased to 42 members, 8 of whom belonged to the artisan class.

In 1356 Nuremberg witnessed the promulgation of the famous Golden Bull of the emperor Charles IV. At the beginning of the 15th century the burggraves of Nuremberg, who had in the meantime raised themselves to the rank of princes of the Empire, were invested with the margraviate of Brandenburg, and sold their castle to the town. They, however, reserved certain rights, and their insistence on these led to fierce and sanguinary feuds between the burghers and the margraves Albert Achilles and Frederick and Albert Alcibiades of Bayreuth.

The quarrel with the margraves, however, did not interfere with the growth of the town's prosperity, which reached its acme in the 16th century. Like Augsburg, Nuremberg attained great wealth as an intermediary between Italy and the East on the one hand, and northern Europe on the other. Its manufactures were so well known that it passed into a proverb—"Nuremberg's hand goes through every land." Its citizens lived in such luxury that Aeneas Sylvius (Pope Pius II.) has left it on record that a simple burgher of Nuremberg was better lodged than the king of Scotland. The town had gradually extended its sway over a territory nearly 500 sq. m. in extent, and was able to furnish the emperor Maximilian with a contingent of 6000 troops. But perhaps the great glory of Nuremberg lies in its claim to be the principal fount of German art. Its important architectural features have already been described. The love of its citizens for sculpture is abundantly manifest in the statues and carvings on their houses. Adam Krafft, Veit Stoss and Peter Vischer form a trinity of sculptors of which any city might be proud. In painting Nuremberg is not less prominent, as the names of Wohlgemuth and Dürer sufficiently indicate. In the decorative arts the Nuremberg handicraftsman attained great perfection in ministering to the luxurious tastes of the burghers, and a large proportion of the old German furniture, silver-plate, stoves and the like, which are now admired in industrial museums, was made in Nuremberg workshops. Wenzel Jamnitzer (1508–1585), the worker in silver, is perhaps eminent enough to be added to the above list of artists. Its place in literary history—by no means an unimportant one—it owes to Hans Sachs and the other meistersänger. A final proof of its vigorous vitality at this period may be found in the numerous inventions of its inhabitants, which include watches, at first called "Nuremberg eggs," the air-gun, gun-locks, the terrestrial and celestial globes, the composition now called brass, and the art of wire-drawing.

Nuremberg was the first of the imperial towns to throw in its lot with the Reformation, and it embraced Protestantism with its wonted vigour about 1525. Its name is associated with a peace concluded between Charles V. and the Protestants in 1532. The first blow to its prosperity was the discovery of the sea-route to India in 1497; and the second was inflicted by the Thirty Years' War, during which Gustavus Adolphus was besieged here in an entrenched camp by Wallenstein. During the eight or ten weeks that the blockade lasted no fewer than 10,000 of the inhabitants are said to have died of want or disease. The downfall of the town was accelerated by the illiberal policy of its patrician rulers; and the French Revolution reduced it to such a degree that in 1796 it offered itself and its territories to the king of Prussia on condition that he would pay its debts. Prussia, however, refused the offer. In 1803 Nuremberg was allowed to maintain its nominal position as a free city, but in 1806 it was annexed to Bavaria.

See Lochner, *Nürnberger Jahrbücher bis 1313* (Nuremberg, 1832–1835); *Nürnbergs Vorzeit und Gegenwart* (Nuremberg, 1845); and *Geschichte der Reichsstadt Nürnberg zur Zeit Kaiser Karls IV.* (Berlin, 1873); Priem, *Geschichte der Stadt Nürnberg bis auf die neueste Zeit* (Nuremberg, 1874); B. Schönlank, *Altnürnbergische Studien* (Leipzig, 1894); L. Rösel, *Alt-Nürnberg* (Nuremberg, 1895); E. Mummenhoff, *Altnürnberg bis zum Jahre 1350* (1890); R. Hagen, *Bilder aus Nürnbergs Geschichte* (Nuremberg, 1889); F. Roth, *Die Einführung der Reformation in Nürnberg* (Würzburg, 1885); J. M. Lotter, *Sagen, Legenden und Geschichten der Stadt Nürnberg* (Nuremberg, 1898); the *Quellenschriften zur Staats- und Kulturgeschichte der Reichsstadt Nürnberg* (Nuremberg, 1893, fol.); and the *Mitteilungen* of the *Verein für Geschichte der Stadt Nürnberg* (Nuremberg, 1879, fol.). See also C. Headlam, *The Story of Nuremberg* (London, 1899).

NURSE (a shortened form of the earlier "nourice," adapted through the French from Lat. *nutrix*, *nutrire*, to nourish), primarily a woman who suckles and takes care of an infant, and more generally one who has the general charge of children; also a person, male or female, who attends to the sick, and particularly one who has been trained professionally for that purpose (see NURSING).

NURSING. The development of sick-nursing, which has brought into existence a large, highly-skilled, and organised profession, is one of the most notable features of modern social life. The evolution of the sick-nurse is mainly due to three very diverse influences—religion, war and science—to name them in chronological order. It was religion which first induced ladies, in the earlier centuries of Christianity, to take up the care of the sick as a charitable duty. The earliest forerunner of the great sisterhood of nurses of whom we have any record was Fabiola, a patrician Roman lady, who in A.D. 380 founded a hospital in Rome with a convalescent home attached, and devoted herself and her fortune to the care of the sick poor. She had a rival in the empress Flaccilla, the pious consort of Theodosius I. (A.D. 379–395), who also personally visited the hospitals and attended on the sick. Organized nursing does not appear to have formed any part of medical treatment, except in so far as the deacons of the church attended on the poor, until the 4th century of the Christian era. After that date the employment of women for this purpose must have developed rapidly, for in the reign of Honorius (A.D. 395–423) six hundred women were engaged in the hospitals of Alexandria. These institutions were managed by the clergy, and throughout the dark and middle ages the hospital and nursing systems were connected with religious bodies. Nurses were provided by the male and female monastic orders, an arrangement which still continues in most Roman Catholic countries, though it is gradually being abandoned through the increasing demands of medical science, which have led the hospitals to establish training schools of their own. The names of the oldest foundations which still survive, such as the Hôtel Dieu in Paris, St Thomas's and St Bartholomew's in London, the order of St Augustine, and (in the form of a modern revival) that of St John of Jerusalem, sufficiently indicate the original religious connexion. The

History.